A SPATIAL ANALYSIS OF SERVICE CENTRES IN ALBERTA, 1986

PART II

CHANGES IN THE COMMERCIAL IMPORTANCE OF THE SERVICE CENTRES IN ALBERTA: 1977-85

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A report on the changes that have taken place in the distribution of commercial functions in the rural service centres of Alberta over the period 1977-85. The report is divided into four main sections:

1. Changes in Commercial Numbers.
2. Distribution of Changes by Grade of Place
3. Spatial Distribution of Changes
4. Changes in the Functional Imbalances of the Centres

Appendix A Changes in Total Establishment Numbers for Service Centres: 1977 and 1985
Appendix B Calculation of the Functional Index Value
Appendix C Functional Index and Population Deficiency Values, 1985
Appendix D Functional Index and Population Deficiency Values, 1977

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INTRODUCTION

This report is the second of a series of studies of rural services centres in Alberta in the mid 1980's, the purposes of which are to define the general characteristics of these nodes on a province-wide basis and to identify the spatial variations in the numbers of places as well as the recent changes in the relative sizes of centre. The first report used information on 83 different types of commercial functions to derive eight grades of place among the 376 service centres in Alberta with more than three establishments. Multivariate procedures such as Cluster Analysis and Discriminant Analysis were used to establish the grouping of places in which a hierarchy of service centres was identified. The objective of this report is to describe the variations that have taken place in the relative importance of these service centres over the past decade based on the changes that have taken place since a previous study of service centres in 1977 (Davies 1979).

The period 1977-85 spans a tumultuous period in Alberta economic history, for the first half displayed an unprecedented boom, followed by a decline, which in the case of the agricultural sector seems to be deepening into one of the worst phases of depression since the 1930's. As such this study provides a snapshot portrait at the results of the 'boom-bust' syndrome upon the service centres in the province although the full effects of the decline were not felt by the time the 1985 data was recorded . It must be emphasized that the goals of the study are not to investigate the performance of *individual* service centres but to review the changes for each group of centres as a whole, in an attempt to identify the general growth trends over the period 1977-85 - although particular places will be identified in the general discussion.. Special attention is paid to the question of whether there were *spatial or geographical variations in the patterns of change*, or whether change was randomly distributed throughout the province.

The report is divided into four sections dealing successively with the general changes in the numbers of commercial functions, the distribution of these functions among the eight grades of centre, the variations in the spatial patterns of commercial change and a summary measure of the effect of these changes upon the general central place importance of each centre.

1. GROWTH IN THE NUMBER OF COMMERCIAL FUNCTIONS

One of the major problems in any investigation of changes in the rural service centres in Alberta is that of obtaining a reliable and comprehensive data source. The annual Alberta Bureau of Statistics (A.B.S.) report on Retail and Service Trade Statistics would appear to be the obvious source both for 1977 and 1985. However it has two limitations: the first relating to its comprehensiveness; the second to its reliability for outlet numbers.

(a) Although the A.B.S. Report provides a detailed breakdown of the number of outlets and establishments in 131 categories of retail and service activities (according to the S.I.C. code of Canada) it does not include professional services such as doctors, dentists, real estate, insurance etc. and is limited in relation to blue-collar service activities such as construction and trucking. The comprehensiveness is further reduced by the restriction of detailed information to centres over 2,000 in population. Only the total number of outlets, employment and total receipts -- not broken down into types of establishments -- are provided for the smaller places. Set against these limitations is the important fact that the source provides information on the number of employees, payroll and receipts.

(b) The question of the reliability of data plagues all service centre reports. In the case of the latest A.B.S. data, for the year 1985, the effective response rate for trade receipts was reported as 80%, whereas the "response for various types of businesses ranged from a high of 92% in the general merchandise group to a slow of 55% in the food and beverage group" (A.B.S. published March 1987, p. 3). It was also noted that when the survey was carried out follow-up calls by telephone were made to non-respondents.

This procedure was carried out for the first time and was held to account for the increase in the reliability of the trade figures. Although the efforts of the A.B.S. to improve the reliability of its data must be welcomed, the extent of the stated error is still very large, and there is no indication of whether there are geographical variations in the reliability of the data - a major problem for studies of the type envisaged here..

For large centres the report certainly provides an important index of the fluctuations in receipts and employment in the retail sector, but as a source of accurate data on numbers of *different types of outlets for all centres in Alberta* it is clearly flawed. Indeed a review of the 1985 A.B.S. figures (A.B.S. March 1987) indicate that the actual error is greater than that stated. Table 1 illustrates this point by summarizing the number of businesses in ten selected categories from the latest A.B.S. report (March 1987 for the 1985/6 years) and a survey of numbers of business types listed in each Alberta service centre in the 1985 telephone books. These outlets were deliberately chosen as examples of easily recognizable businesses in both sources -- so problems of classification by type were minimized.

TABLE 1: A SAMPLE COMPARISON OF TWO DATA SOURCES

TYPE OF OUTLET	SOURCE OF INFORMATION 1985 TELEPHONE BOOKS	A.B.S. 1985
Florist	423	292
Jewellers/Watches	388	338
Car Wash	198	82
Hardware	390	248
Funeral Services	122	78
Hotel/Motel	1102	921
Beauty Salons	1422	1058
Barbers	266	261
Pharmacies/Drugs	639	507
Shoe Stores	377	333

The consistent undercounting of the A.B.S. figures, compared to the survey from the telephone books, was paralleled when studies of individual centres were made. The conclusion was reached that data on the number of outlets of individual types can best be obtained from telephone books since all businesses are likely to possess a telephone. Although the extraction of data in this way is a *very* time-consuming data extraction procedure it seemed more reliable. The problem is, of course, that a study of service centres using this source was unable to use data on receipts at a settlement level. However, an important advantage was that the 1985 data was comparable with a 1977 data set derived from the same source - incidentally one in which similar conclusions were reached about data reliability (Davies 1979).

A total of 83 business types (each of which had a minimum of 100 outlets in the province) were identified and the numbers in each category for each settlement were calculated. Although this total was adequate to cover the variability of functions for small towns much more specialized activities are found in the metropolitan areas. Hence this set of information does understate the variety of large city businesses which cover more specialized activities than the 83 types identified in this study. Since the objective of this study was to investigate changes in *rural* service centres between 1977 and 1985 this issue was not considered to be a problem. To add to the list of 83 functions for some 376 centres would simply produce many more variables with zero entries for most places, adding to the problems of analysis

Table 1 compares the total number of outlets of the 83 business types for all centres in Alberta (other than Calgary and Edmonton) which had more than three establishments in both 1977 and 1985. Only the totals for the largest 194 places were reported in a previous study for 1977 (Davies 1979). Although the 1985 data collection tried to duplicate the 1977 procedure some changes in seven of the categories had to be made to ensure a more accurate count in 1985. The numbers in the Other Retail (18) category recorded substantial increases which was in part due to the addition of new retail types and services in 1985 -

TABLE 2: CHANGES IN THE NUMBERS OF ALBERTA ESTABLISHMENTS: 1977 - 1985

Table 1

Outside Calgary & Edmonton

	Establishment Type	1977	1985	%change	
1	Gas/Repairs	1420.9	1896.6	133.48	
2	General Store	951.3	970.9	102.06	
3	Construction	1839.5	2525.9	137.31	
4	Other Service	1135.5	2763.0		*
5	Bulk Fuel/Feed/Propane	875.9	775.7	88.56	
6	Trucking	1067.0	1812.9	169.91	
7	Hotel/Motel	792.0	898.5	113.45	
8	Restaurant	858.1	1411.5	164.49	
9	Welder/Blacksmith	469.9	745.0	158.54	
10	Insurance	529.4	728.6	137.63	
11	Doctor	709.0	875.0	123.41	
12	Bank	394.5	505.5	128.14	
13	Beauty Salon	416.5	660.8	158.66	
14	Hardware	381.3	345.0	90.48	
15	Building Supplies	456.7	575.4	125.99	
16	Farm Equipment/Rentals	469.8	656.1	139.66	
17	Electrical Contr'r	321.5	392.8	122.18	
18	Other Retail	92.2	659.2		*
19	Plumbing/Heating	469.5	556.8	118.59	
20	Auto Parts	414.1	597.7	144.34	
21	Drug Store	284.0	321.0	113.03	
22	Liquor Store	130.0	142.0	109.23	
23	Meat/Frozen Food	163.8	161.8	98.78	
24	Florist	130.7	202.5	154.93	
25	Real Estate	464.0	637.5	137.39	
26	Appliances	440.0	484.9	110.20	
27	Accountant	323.3	498.5	154.19	
28	Lawyer's Office	323.0	499.8	154.74	
29	Auto Sales	379.6	488.1	128.58	
30	Crafts/Art/Hobby	142.5	324.3	277.58	
31	Dept./Gen.Merch.	44.0	200.0		*
32	Veterinarian	147.0	192.0	130.61	
33	Investment Co.	84.5	345.5	408.88	
34	Dentist	195.0	369.0	189.23	
35	Chiropracter	125.0	158.0	126.40	
36	Credit Union	154.1	170.5	110.64	
37	Bakery	121.6	138.3	113.73	
38	Sand/Gravel	91.8	171.5	186.82	
39	Womens Clothes	161.0	296.5	184.16	
40	Catelogue Sales	92.1	66.0	71.66	
41	Management Consultant	132.0	200.3	151.74	
42	Dry Cleaning/Laundry	158.1	245.6	155.34	
43	Excavating	307.5	508.6	165.40	
44	Painter/Decorator	218.0	350.5	160.78	
45	Sports Goods	193.8	291.7	150.52	
46	Cleaning Services	166.0	326.0	196.39	
47	Gifts/Novelty	142.3	215.1	151.16	
48	General Clothing	251.0	246.4	98.17	
49	Carpets/Floor Covers	104.5	203.0	194.26	
50	Travel Agent	101.1	162.5	160.73	
51	Curtains/Fabrics	121.5	206.3	169.79	
52	Garden Centre	129.0	171.3	132.79	
53	Barber	132.0	174.7	132.35	
54	Furniture	176.2	200.9	114.02	
55	Confectionary	139.7	154.2	110.38	
56	Jewellery	131.7	189.3	143.74	
57	Photographers/Supplies	115.0	217.8	189.39	
58	Car Wash	47.8	107.3	224.48	
59	Mens Clothes	120.0	162.5	135.42	
60	Auctioneer	106.0	129.0	121.70	
61	Supermarket	217.5	156.2		*
62	Funeral Home	72.5	87.5	120.69	
63	Carpenter	63.5	199.8	314.65	
64	Optometrist	149.0	164.0	110.07	
65	Cinema	61.0	77.0	126.23	
66	Books/Stationary	74.0	126.3	170.68	
67	Luggage/Leather	39.5	72.5	183.54	
68	Car Rental	97.0	148.0	152.58	
69	Caterer	34.0	99.3	292.06	
70	Bowling/Billiards	85.5	142.5	166.67	
71	Land Developer	54.5	159.5	292.66	
72	Misc. Repairs	217.5	142.1		*
73	Shoes	101.5	113.0	111.33	
74	Office Equipment	86.5	171.8	198.61	
75	Music Store	71.5	129.5	180.42	
76	Upholsterer	63.5	86.5	136.22	
77	Mortgage	43.0	97.0	225.58	
78	Architect	35.0	82.0	234.29	
79	Motor Cycles	34.0	89.0	261.76	
80	Health/Spec.Food	53.5	87.0	162.62	
81	Second Hand Goods	46.5	61.7	132.69	
82	Elect.Repair Shop	35.0	174.8		*
83	Mobile Home & Recreational Veh. in 1977.	164.0	65.0		*

* Change in type means % would be misleading

such as video stores and outlets - but also due to more comprehensive data collection. In three other cases it proved difficult to distinguish between types of business. The apparent decrease in the Miscellaneous Service (72) category and increase in Electrical Repairs (82) is a function of the limited descriptions of such businesses in the telephone books and in many ways it may be as well to add these together. In some small towns in 1977 the term 'supermarket' (61) was used for some of the self service general stores - whereas in 1985 the term is linked, much more cautiously, only to large scale food retailers. The term Mobile Home category in 1985 meant exactly that, rather than including Other Recreational vehicles as in 1977. In 1985 the Department Store category was expanded to include outlets for General Merchandise that encompassed several major product lines, rather than only the *large* outlets of the main national chains. These changes only affected seven of the 83 categories in 1985: the others remain the same in 1977. Many of the problems could have been resolved by a telephone call follow-up but resources in 1985 did not permit this approach. It must be stressed, however, that these issues do not affect the comparison of places in terms of total numbers of business (Sections 2 and 3) or the Functional Index measures (Section 4) - tests showed that similar results were obtained when these functions were excluded from the analysis.

Table 1 shows the changes in the numbers of outlets in the Alberta service centres - outside the two metropolitan areas. The changes in the establishment types that are directly comparable are measured using a base of 100 to indicate no change. Table 1 shows that five of the types of outlet recorded decreases over the period: Catalogue Sales Outlets (or Department Store Mail Order Outlet, 71.2), Meat and Frozen Food Lockers (98.8), Bulk Fuel and Feed (88.6), Hardware (90.5) and General Clothing (98.2). The first two of these examples demonstrate changes that have occurred in the organization of the retail sector - the closure of both department store mail order outlets and the specialist meat and frozen food merchants (in the light of supermarket growth). The last three indicate the

rationalization of functions in smaller service centres that no longer have the threshold to support such businesses.

TABLE 3: DISTRIBUTION OF CHANGES IN COMMERCIAL OUTLETS: 1977 - 1985

< 100*	100*-119	120-139	140-159	160-179	180-200	> 200
5	12	20	12	9	9	9

*100 = No change 119 = 19% increase

Yet apart from these examples all 71 of the other business types showed an expansion in numbers. The growth was not substantial in the case of General Stores and Groceries (102.1), again a function of the stagnation of many small towns and the larger scale operation of food retailing in the bigger centres, or in Liquor Stores (109.2), a tightly controlled government monopoly. At the other end of the table higher levels of disposable income and interest in, as well as demand for, new activities - particularly financial - account for the big increase in functions that have also diffused to smaller centres: Craft and Hobby Stores (227.6), Car Wash (224.5), Caterers (292.1), Motor Cycle (261.8), Mortgage and Loan Agencies (225.6), Land Developers (292.7), Investment and Holding Companies (408.9). In addition the boom in energy-related building projects in rural areas was reflected by major increases in several service trades: Other Services (243.3) and Carpenters (314.7). All of the other 60 types recorded increases in numbers between 10% and 100%. Table 2 shows that the 20 to 39% category of increase (120-139) recorded the largest number of types of outlet. Incidentally this reflects the percentage population growth of the province between 1976 and 1986, from 1.838 m to 2.366 m, an increase of 28.71%.

2. DISTRIBUTION OF CHANGES BY GRADE OF PLACE

Table 4 summarizes the changes in the *total numbers* of commercial functions between 1977 and 1985, using the 1985 classification of places. Some additional characteristics of the grade provide a context for the interpretation of the changes. The median values of each group were used as the measure of central tendency to avoid two problems: first the bias associated with the use of average values in a situation in which there were some extremely large growth trends in a few centres; second by the differences in the number of cases in each category.

Four general conclusions can be derived from Table 4.

1) No major differences were found in the median values of changes for the groups in the Northern, as opposed to Southern Alberta places. (This division was made along an east/west axis between Ponoka and Lacombe reflecting the Calgary - Edmonton metropolitan trade areas). *Table 4 shows that similar median values for the two study areas are found in all seven grades,* from Grades II to VIII, with the exception of the lower values in Grade IIb, the rather unique sub group of Northern Alberta satellite centres.

2) This general conclusion of similarity should not be allowed to disguise the fact that *the northern settlements did manage to add more functions than those in the south*, a total of 6199 commercial establishments (in the 83 categories of function used in the study) for Grade II to VIII places compared to 4347 in the south. Part of this difference is accounted for by the fact there are more places in the north; once these totals are divided by the number of service centres, the north shows an average of 29.7 establishments per central place compared to 26.5 in the south. Such averages are meaningless as figures in their own right - given the very different sizes of the central places over which they are spread - but they demonstrate an important point. Although there was a general similarity of change over the 1977-85 period for the seven grades of places, the median values show that the Northern Alberta settlements did show higher absolute increases in their addition of functions over the period compared to those in the south. Nevertheless, those differences

TABLE 4: CHANGES IN COMMERCIAL FUNCTIONS BY GRADE OF PLACE: 1977 - 1985

1985 Commercial Outlets (Median)	SOUTHERN ALBERTA Changes in Numbers of Establishments		GRADE OF PLACE (Excluding Metropolitan Centres or Grade I) (1985 Data)			NORTHERN ALBERTA Changes in Numbers of Establishments		1986 Commercial Outlets (Median)
	Total Additions in Numbers for Group	**Median** (Range of Values)				**Median** (Range of Values)	Total Additions in Numbers for Group	
2028	+1701	**+547** (521,633)	(3)	II	Regional (1) (3)	**+560** +338 (324,344)	+560 +1004	1291 756
305	+868	**+87** (53,140)	(10)* *Excluding Banff	III	Sub-Regional (19)	**+100** (314,37)	+2218	355
163	+1115	**+44** (12,188)	(19)	IV	District (28)	+49 (+119,23)	+1392	143
67	+338	**+11** (0,37)	(19)	V	Sub-District (31)	**+14** (46,-9)	+440 -23	50
37	+93	**+8** (3,21)	(11)	VI	Large Local Service (18)	**+9** (+30,-4)	+260 -6	41
10	+183* -33	**+3** (-4,25)	(52)	VII	Local Service (57)	**+5** (+18,-6)	+357 -16	18
6	+35 -49	**0** (-6,+5)	(50)	VIII	Minor Service (52)	**0** +6,-3)	+55 -32	6
			(No. of Places)		Grades (No. of Places)			
			164		209			

*The numbers of increases and decreases are showed separately. In this example the centres with increases gained 183 establishments whereas those places with declines lost 33 businesses, making a change of +150 in total.

N.B. The data were obtained from information on 83 different types of commercial establishments provided in the white pages of the telephone books for Alberta in 1977 and 1985. The groups are the grades of service centres established for Alberta in 1985 using non-hierarchical cluster analysis procedures (Davies, W.K.D. 1986).

were confined to the grades, in the sense that they were not large enough to destroy the overall similarity in the amount of typical change experienced by the two areas on the basis of the hierarchical grades of place.

3) The third important characteristic of Table 4 is the *high degree of centralization that took place in the addition of commercial functions among the various groups of centres.* This is particularly obvious in Table 2 which shows the *absolute increase in* the number of functions between 1977 and 1985 at the Grade II or Regional level. The median change for the largest places is 547 establishments in the south and 560 in the north, absolute increases in commercial establishments numbers that are over five times the absolute changes for the next or Sub-Regional grade, 87 and 100. The discrepancy is not so large between the next pair of grades, but the Sub-Regional centres, on balance, still grew at double the size of the level, for the District grade only grew by 44 and 49 (south and north respectively). The proportionate increase widened again between the District and Sub-District median values, with the former adding almost four times as many commercial activities (namely 44 to 49 compared to 11 and 14) as the latter between 1977 and 1985. Between the Sub-District and Large Local Service (Grade VI) grades the gap is relatively small, and is only a third or a half higher, from 8 to 11 establishments in Southern Alberta and 9 to 14 in Northern Alberta. The typical increases are much smaller, at the Local Service Centre Level (Grade VII) accounting for between 3 and 5 establishments, whilst at the Minor Service Centre grade VIII the median changes are zero, showing that at this level the typical centre remained similar in total the numbers of commercial establishments between 1977 and 85, despite the general boom in the economy of the province. This stagnation meant the smallest central places of all did not share in this boom, although some individual places grew whilst others declined.

Emphasis upon the absolute increases in numbers of commercial functions must not be allowed to disguise the importance of the *relative changes* in the numbers of functions at the various grades. The changes are seen to produce higher proportionate increases among

the largest centres in Southern Alberta. In Grade II to IV (Regional to District) places in South Alberta the changes typically accounted for almost a quarter of the establishments found in 1985 compared to below a fifth or sixth for the lower grades (see Column 1 and Column 3 in Table 4). In other words the 1977-85 addition of establishments to Southern Alberta central places typically had a proportionately greater impact on the larger places than the smaller ones. Such consistency by grade is not so apparent in the Northern case study area, but the proportional increase was often higher, fluctuating between a third and just over a quarter. The reason for the latter characteristic is that although approximately similar absolute increases in numbers were recorded, they took place on a smaller existing base in the North, thereby producing a greater impact.

4) So far the discussion has focused upon the variations in *the growth* in commercial numbers by grade of place. However, *centres with an absolute decline in the numbers* of *commercial activities over the period were found mainly in the Grade VII (Local Service) and Grade VIII (Minor Service) centres,* although it must be recorded that six northern places in higher grades (Hardisty, Legal, Vilna, and Mundare in Group V and Irma and Sangudo in Group VI) also experienced minor decreases. Among the Grade VII centres with changes that are known, a total of fourteen (13.1%) places recorded absolute decreases, with another nine (7.4%) recording similar values over the period. This means that *one in five of the Local Service Centres (Grade VIII) did not grow or actually declined in commercial importance,* thereby failing to share in the general increase in commercial numbers in the province. At the Grade VIII level these proportions were even higher. Of the 102 centres for which information is available a total of 35(34.3%) places showed an absolute decline in commercial numbers, with another 22 (21.5%) having similar numbers. This means that *over half (55.8%) of the Grade VIII centres stagnated or declined in commercial importance over the 1977-85 period.*

These trends demonstrate that there were significant differences between the general performance of grades of service centres in the province between 1977-85. These changes

can be summarized *in terms of the increasing importance of the larger nodes and the stagnation or decrease of the majority of the smallest places of all,* namely (Grade VIII places, a feature that also affects an important minority of the Grade VII (Local Service) centres. The general trend of growth, therefore, was not shared out among all the service centres of the province. Initial size of place seems to have been of crucial importance in determining the changes that took place over the study period. Certainly these results show that the much vaunted counter-urbanization trend of the 1970's (Berry 1976) in which many small towns grew, must be considered a population, rather than a commercial trend. In a province that experienced so much growth in the 1970's the decline of so many of the smaller centres in commercial terms between 1977 and 1985 is an important trend that needs emphasis.

3. SPATIAL DISTRIBUTION OF CHANGES.

Analysis of the distribution of changes in the numbers of commercial establishments in the settlements of Alberta by grade of place failed to answer the question of whether *spatial variations in the location of the growth or decline* occurred. The issue was resolved by identifying (Appendix A), and then mapping, the changes in the number of commercial establishments in each centre for each grade between 1977 and 1985, and dividing the values in each grade into four groups based on sizes of change: the top quartile, above median, below median and bottom quartile for the group. (Median values were more appropriate than averages for this purpose because average values will be influenced by the variations in the number of places in each grade of place and by the extreme values, particularly the very rapidly growing settlements in the metropolitan hinterlands). It seemed unnecessarily complex to provide a separate map of the distribution of the changes for each group. Scrutiny of the information for the individual groups revealed that two general distributions could be identified: Figure 1a and b shows the variations associated with Grade III (Sub-Regional) and VI (Large Local Service) centres; Figure 2a and b identifies those associated with the Grade VII (Local Service) and VIII the

complete table of the changes in number of commercial outlets the individual centres arranged by 1985 and 1977 classification of places. It must be noted that the 1977 classification used some less sophisticated technical procedures so that the two classifications should not be rigorously compared. The differences, however will only affect the top third of Grade 7b Centres (1977) which would probably be in a higher grade using the 1985 techniques.

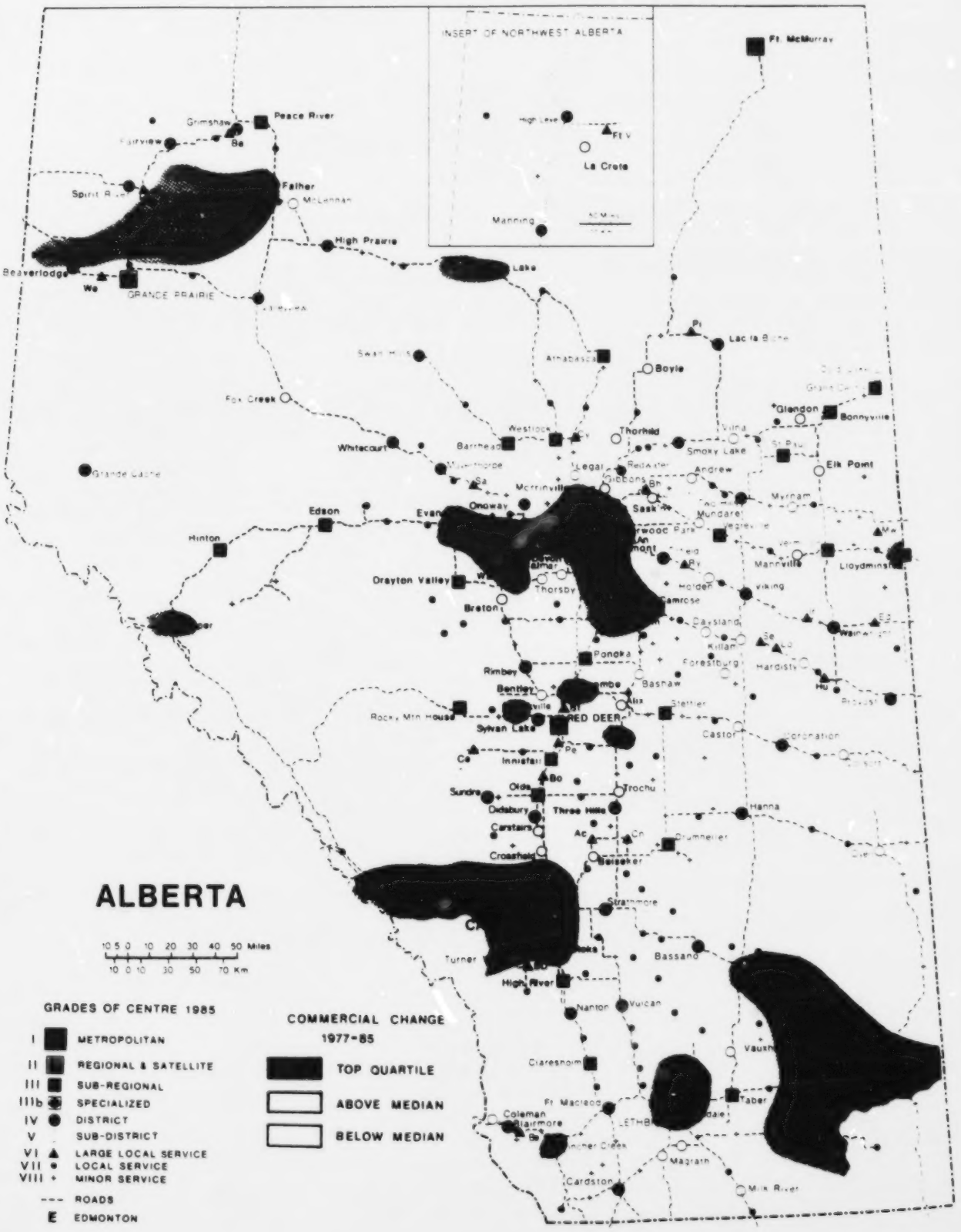
A. Above Median Changes in Grade III to VI Centres

The shaded areas in Figure 1a identify the settlements with above median values in the changes of commercial functions for all centres in Grades III (Sub-Regional) to VI (Large Local Service). The darker shading shows the areas in the province in which the settlements that recorded the top quartile values are located. Three basic patterns can be observed.

1) The most dominant characteristic is the concentration of places with the greatest growth (the two highest quartiles) in the Calgary and Edmonton hinterlands, or inner commuting zone, perhaps 40-50 miles from each metropolitan centre, and extending as a corridor fifty miles wide along the axis of Highway 2, between from the Rocky Mountain foothills to the vicinity of Highway 21. Apart from pockets of higher values around Red Deer and a set of below median values south and southeast of Edmonton (from Thorsby and Calmar to Ponoka) the zone is remarkably continuous, with settlements in the areas immediately around Calgary and Edmonton showing the highest quartiles or largest increases. In the case of the Edmonton area this zone of top quartile values is rather eccentric, extending west to Evansburg and Warburg and southeast to Wetaskiwin and Camrose, but has a much smaller extension to the north. The area also has two western spurs: in the north through the resource towns along Highway 16 to include the tourist centre of Jasper; in the south along the Bow Corridor to Banff.

2) The second area of settlements with above median values, identifying zones of Grade

FIGURE 1a: AREAS OF GRADE III TO VI CENTRES SHOWING ABOVE MEDIAN CHANGES



III to VI settlements with higher absolute growth in the numbers of commercial establishments, is found in the northern belt: from the Peace River east along Highway 2 south of Slave Lake broadening between Lac La Biche and Thorhild area before narrowing in the Bonnyville - Glendon region and extending south to Elk Point. Significantly the above median values do not include the Grand Centre - Cold Lake area. An outlier of similar growth is found west and southwest of Lloydminister. The set of settlements along the Hythe - Falher axis north of Grand Prairie recorded the top quartile scores in this zone.

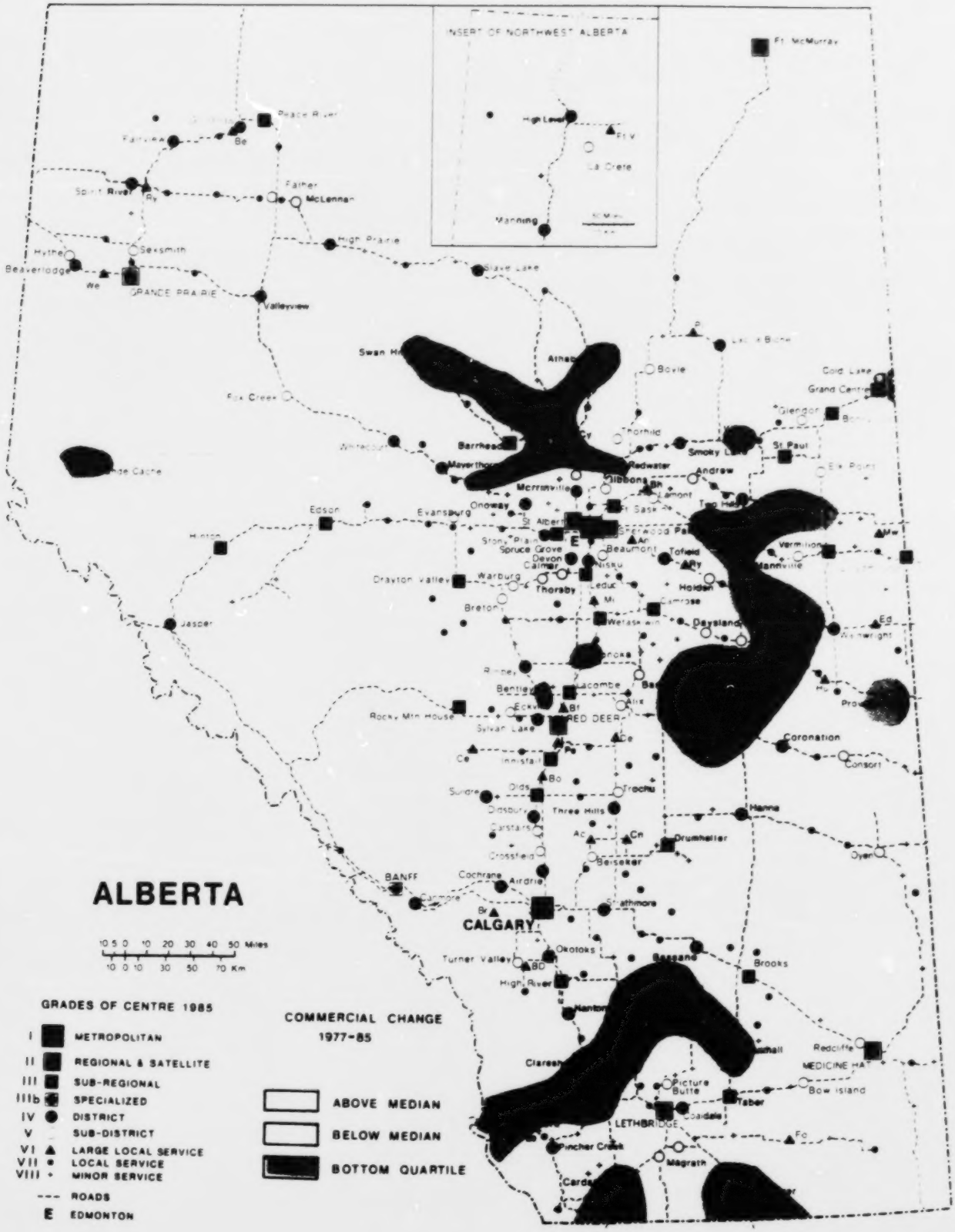
3) Patches of greater growth also occurred in Southern Alberta, but the distribution is discontinuous. Pincher Creek is one community with greater growth, then there is a larger area that includes the satellites east of Lethbridge. Finally a relatively extensive growth zone, almost triangular in shape is found in the Brooks, Medicine Hat, Bow Island, Foremost area although it must be noted that the area contains few settlements.

The spatial coherence of most of these areas in which settlements had above median growth in the commercial sector suggest that regional trends are influential in accounting for these growth characteristics. It is difficult to find complete explanations for these above--average growth trends, given the different sizes of settlements. But the association with the Calgary-Edmonton metropolitan areas and the corridor between, is so marked that it seems appropriate to invoke such metropolitan fringe and transportation corridor explanations for most of the Southern and Central Alberta growth areas. In addition the late 1970's boom in the resource and frontier towns of the north provide reasonable explanations for their greater than normal commercial growth for the 1977-85 period as a whole. It must be stressed, however, that practically all places in Groups VII to VI grew in commercial importance. Figure 1a simply shows the places with above median growth, in other words the areas where the settlements showed exceptional trends.

B. Below Median Changes in Grade III to IV Centres

Figure 1b shows the reverse of Figure 1a, namely the areas where settlements recorded below median, or bottom quartile changes in the number of commercial

FIGURE 1b: AREAS OF GRADE III TO VI CENTRES SHOWING BELOW MEDIAN CHANGES

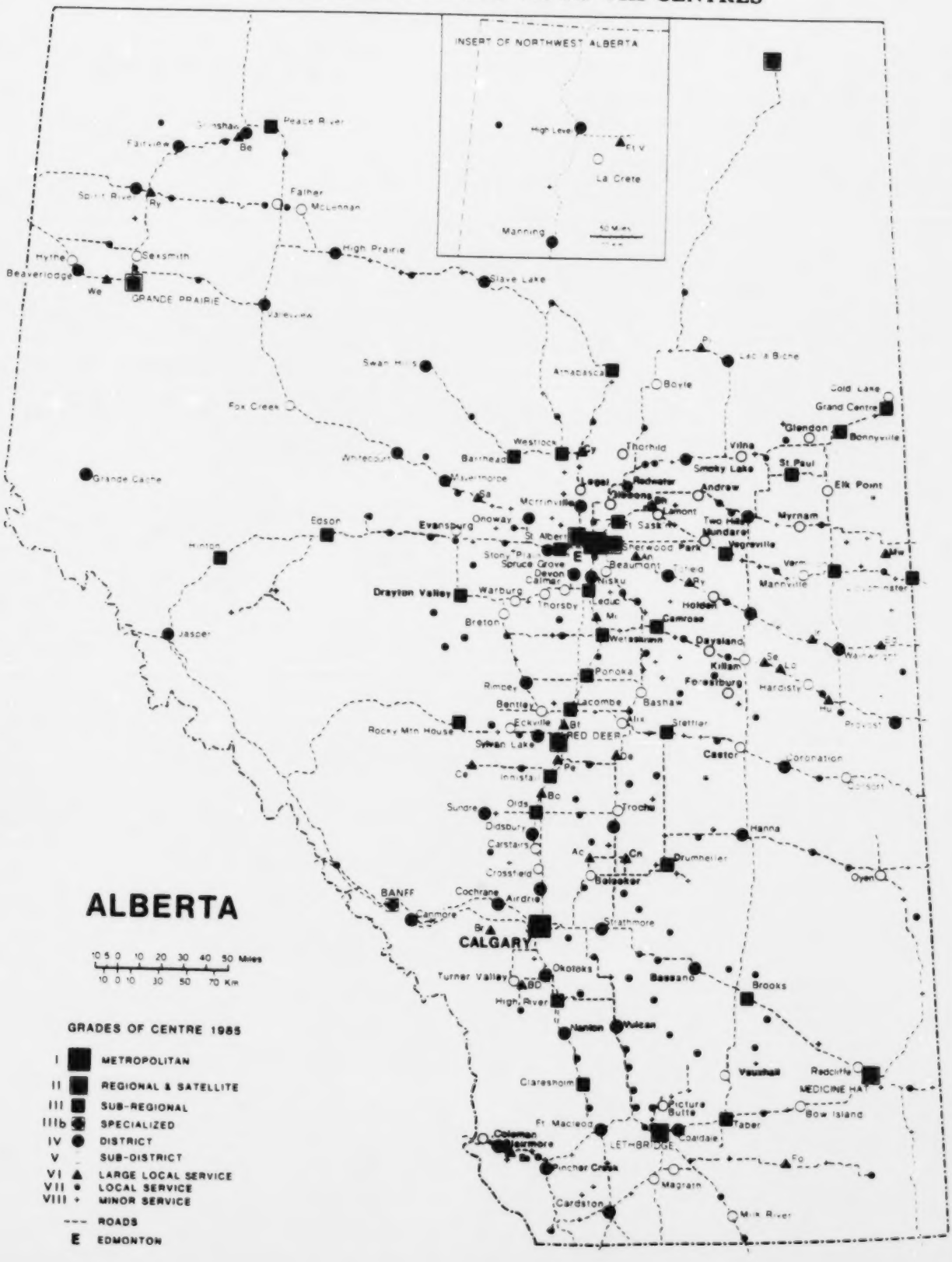


establishments between 1977 and 1985. Again it must be noted that practically all of the Group III to VI settlements have experienced growth. The settlements, therefore, identified in Figure 1b did not decline, instead most simply had below average increases in the commercial sector. Nevertheless, Figure 1b shows that a broad zone of below median increases can be identified, lying mainly east of the Highway 21 and 24 axis. in the south it crosses Highway 2 south of High River to Crows Nest Pass and in the north extends northwest of Redwater to Valleyview. The smallest increases of all among the settlements are found in three main zones: first, north and west of Edmonton, namely Swan Hills, Athabasca, Westlock, Sangudo and Redwater; second, in the central agricultural belt of the province from Myrnam to Stettler; and third, in an arc from the Crows Nest Pass to Vulcan then south to Vauxhall. Other outliers of smaller growth occur in several areas, for example the declining local towns of the Crows Nest Pass or the more isolated northern resource towns or service centres such as Grande Cache, Swan Hill and Athabasca. However, *the geographical concentration of this belt of below average growth in the agricultural areas of the province east of the Highway 21 and 24 axis is noteworthy*. It demonstrates that below average commercial growth, over the 1977 - 1985 period which was largely a phase of population increase, was found in towns where the urban economy was largely restricted to their agricultural role as service nodes located outside the commuting zone of the metropolitan centres.

C. Changes in Grade VII and VIII Centres.

Figure 2 shows the location of the areas containing settlements in which above median and below median changes in the numbers of commercial outlets between 1977 and 1985 can be recognized. It must be emphasized that only the three largest grades of centre in 1985 (I to III) are shown on the map - in addition to Grade VII and VIII places - and simply to provide reference points to avoid an over complex map. Figure 2 provides a fascinating corrollary to Figure 1b - this time for the smallest centres- for the pattern is very similar. The below median changes are found in a broad belt east of the Calgary-Edmonton

FIGURE 2: CHANGES IN GRADE VII TO VIII CENTRES



corridor. In the south and centre it is 50 miles wide between Highways 2 and 25 just north of Lethbridge to the area between the Highway 9/21 areas to just west of Highway 36 between Calgary and Edmonton. This part of the zone is certainly interrupted in its east-west extent, being broken in the Strathmore vicinity and compressed east of Stettler and Tofield (south east of Edmonton). These areas are all associated with major east-west routeways: Highways 14, 12 and 1, from north to south respectively. In the north this belt of below median change is much wider. Its eastern edge arcs eastwards to just north of Vermillion to the Saskatchewan border and extends just north of Edmonton to the Westlock -Cold Lake axis. Outside this major zone are smaller zones containing settlements in Grades VII and VIII having below median values. Most of these are in isolated areas with limited commercial potential: areas off the major roads (La Glace and Woking in the Peace River); in depressed former mining areas (Crows Nest Pass and the Cadomin area); or in low population density areas (Highway 9 in the Oyen vicinity). The important characteristic of Figure 2 is, of course, the the primary association with a main agricultural belt of the province in which service centres do not have much other economic support - unlike settlements along the Calgary - Edmonton axis. Perhaps it is surprising that more of the settlements in the Eastern Dry Belt of the province are not in this category. It must be remembered that there are far fewer settlements in this area to be included in this analysis because of the limited population threshold for businesses. So the few centres that are found have managed to maintain their commercial numbers, albeit at a very low level.

A final cautionary note must be made about Figure 2. It relates to *median changes*. The areas of below median decline contain the settlements in Grade VIII that show zero change or absolute decreases over the period, whereas some of these in Grade VII - where the median change is 3 to 5 functions - have grown slightly. In other words the focus of interest in Figure 2 is in the *relative changes*, relative to the norm for places in the two groups.

The important trends, therefore, in Figures 1 and 2 are those of above average growth in the metropolitan hinterlands and major corridors as well as in the larger resource towns, compared to below median changes in the exclusively agricultural areas of the province. This demonstrates that despite the overall trend of growth in the province the towns in the agricultural areas outside the main Edmonton-Calgary-Lethbridge axis lagged behind their counterparts elsewhere.

4. VARIATIONS IN FUNCTIONAL INDEX AND POPULATION DEFICIENCIES

Over any time period the changes in the character of service centres are a function not only of the variations in the total numbers of establishments, but also of the variations in the numbers of different outlets. In the last resort these service centre changes are intimately related to the population of the centres and their trade areas, or more accurately to the available local consumer expenditures, apart from income derived from spending by temporary residents or travellers. The population of a centre, therefore, is not an entirely useful surrogate for commercial importance; a service centre is likely to have a lower population than its commercial equipment would suggest because of this out-of-centre support. Moreover, at any point in time centres may be under-or over-endowed by commercial activities, for the dynamics of consumer expenditure means that some outlets may be no longer profitable and and are on the path to closure, whilst the potential demand for other businesses may be unfulfilled by entrepreneurs.

It is difficult to provide a comprehensive view of these issues for an area the size of Alberta with such a large number of service centres and only having recourse to numbers of outlets of different types. One way of dealing with the problem is by producing a summary measure of the importance of a place, its central place centrality in Christaller's terms, by means of the Functional Index measure (Davies 1965, 1979) and then using this value to calculate the population excess or deficiency of a centre to show the extent of 'out-of-centre' support. Such calculations were made for the 1977 and the 1985 sets of places

enabling the production of summary statistics on the Functional Index and Population Excess/Deficiency for places [Appendix C, for 1985; Appendix D for 1977]

The precise method by which the Functional Index is calculated is described in Appendix B. Each type of function of establishment type is given a location coefficient on the basis of the total number of outlets of this type in the province. In this way each commercial function is made equivalent to a common base. The more ubiquitous types of commercial functions have low coefficients whereas specialized functions have high values. In each centre the location coefficients for each function are multiplied by the number of outlets for that type to produce a matrix of centrality values for each function and place. Then the totals for all the centrality values in each centre are summed to provide a Functional Index for each centre, a summary measure of the commercial importance of a place. By dividing these indices by the total number of functional types used in the study, the percentage importance of each centre in the study area on the basis of all these commercial types can be determined as a Functional Coefficient value. Since all the commercial functions are related to a common base, the totals for the province as a whole, a similar index can be constructed for population, by dividing the population of the centre in the total population of the province. This Population Coefficient Value can then be directly compared to the Functional Coefficient. On the basis of the commercial equipment, therefore, a Population Estimate of each settlement can be calculated. Since service centres serve the area around their hinterlands as well as the centre itself, the population of most central places are less than that expected from the Population Estimate, so most centres should record Population Deficiencies. Centres that have larger populations than estimated from the commercial equipment are obviously dependent upon some other node -- so Population Excess values will be typical, as in bedroom communities which have large populations but limited numbers of commercial functions. Appendix C and D provide a listing of all these values for each place in 1977 and 1985. It will be noted that there are some differences in the set of places between the two dates, for not all 1977 centres reached

the minimum cut-off of three establishments, where as there were additional places at this level in 1985.

Tables 5 and 6 summarize the basic characteristics of the changes in the functional Index and Population /Commercial Discrepancies between 1977 and 1985. In Table 5 the median values for the groups are shown whereas Table 6 lists the centres in which population excesses were recorded on the basis of the commercial equipment of each place. In both cases the 1976 and 1986 census population figures were used. Although a year different to the commercial outlet data these values provided a more accurate population estimate than the annual population figures reported by A.B.S., so many of which are self-reported by the communities and do not change from year to year (see Davies 1987, Report 3).

Table 5 confirms the increasing dominance or centralization that took place in the location of the commercial activities of the province between 1977 and 1985. In Southern Alberta the Functional Index values, a measure of service centre importance, grew at rates of approximately a third, a quarter and a fifth in the Grades II, III, and IV places respectively. High levels of growth also occurred in Northern Alberta centres at those levels but without the consistent positive relationship between size and high growth rates. At the Sub-District level the Southern Alberta centres showed very little increase between 1977 and 1985. This was also characteristic of the grade in Northern Alberta. It seems to be a function of many places in the 1985 group improving their central place importance from 1977. Nevertheless the median values of the northern centres in Group V are still below the Southern Alberta levels. Small absolute increases were also recorded at the Large Local Service Centre (Grade VI) level, but the similarity of values at the Grade VII (Local Service) Level demonstrate, once again, the virtual stagnation of many centres at the grade during this period of growth in the province. Most of the Grade VIII places are unincorporated, so since population values were not available in April 1987 the Functional Indices cannot be calculated.

TABLE 5: 1977 AND 1985 VALUES FOR THE GROUPS OF CENTRES

GRADES	1977 SOUTHERN ALBERTA (NOKTHERN ALBERTA) Median 1976 Population	Median Functional Index	Median Population Deficiency	1985 SOUTHERN ALBERTA (NORTHERN ALBERTA Median 1986 Population	Median Functional Index	Median Population Deficiency
II Regional	32811 (a 17626) (b 24129)	210.81 (a 106.4) (b 62.8)	-11988.2 (a -5940) (b +11279.7)	54425 (a 26 471) b 34949	269.9 (a 153.8) (b 103.4)	-22512.7 (-17369.1) (+6689)
III Sub-Regional	3 658 (4303)	30.6 (36.1)	-3246.8 (-3178.8)	5182 (5473)	40.0 (43.8)	-5737.2 (-5721.6)
IV District	1795 (1665)	16.3 (13.2)	-1668.4 (-1196.0)	3497 (1987)	19.8 (17.1)	-2720.9 (-2652.9)
V Sub-District	1059 (657)	7.8 (4.4)	-842.9 (-389)	979 (778)	8.0 (6.9)	-1387.4 (-1013.2)
VI Large Local Service	661 (428)	3.5 (3.2)	-192.5 (-284.1)	595 (500)	4.7 3.7	-618.1 (-551.2)
VII Local Service	232	1.4	-58.4	294	1.5	-116.0
VIII Minor Service	N/A	N/A	N/A	N/A	N/A	N/A

*N. Alberta a. Grande Prairie b. St. Albert, Sherwood Park, Ft. McMurray.
[No population values are available for Sherwood Park. Banff, Jasper and Waterton have been estimated for 1985 assuming the population of townsite/non townsite population is the same as in 1981.]

TABLE 6: CENTRES WITH POPULATION/COMMERCIAL ESTABLISHMENT EXCESS

	SOUTHERN ALBERTA			NORTHERN ALBERTA		
	PLACE	1977	1985	PLACE	1977	1985
GRADE II				Sherwood Park	12327	N.P.
				St. Albert	11274	7226
				Ft. McMurray	1511	6685
GRADE III				Leduc	-150	-1176
				Spruce Grove	N.P.	N.P.
				Ft. St. John	1120	-498
GRADE IV	Airdrie	-1646	1119	Nisku	N.P.	N.P.
	Crows Nest Pass	N.P.	1612	Grande Cache	256	-421
				Swaan Hills	443	-898
GRADE V	Redcliff	930	720	Gibbons	308	497
	Magrath	174	190	McLennan	185	-615
	Raymond	410	1050	Beaumont	-440	1781
	Coleman	285	Part of C.N.P.			
GRADE VI	Black Diamond	145	54	Ft. Vermillion	306	N.P.
	Bellevue	463	Part of C.N.P.	Wembley	365	253
	Bragg Creek	145	N.P.	Ryley	64	-88
	Penhold	-23	469			
GRADE VII	Nobleford	41	175	Wabanum	186	-278
	Cowley	98	71	Bon Accord	210	576
	Youngstown	145	37	Entwhistle	51	-229
	Cluny	26	5	Rainbow J.	57	-101
	Coalhurst	293	783	Peers	22	N.P.
	Irvine	-45	132	Ft. Chipewan	845	N.P.
	Big Valley	12	-99	Jarvie	29	N.P.
	Tilley	-65	48	Kitscoty	87	276
	Rosemary	-67	137	Wanham	65	-305
	Irricana	-53	183	Clairmont	459	N.P.
	Mirror	94	-188	Smith	231	-411
	Gleichen	77	-136	Czar	68	-100
	Champion	16	-50	Chauvin	72	-260
	Grassy Lake	15	-67	La Glace	9	N.P.
	Halkirk	115	-116	Strome	95	106
	Torrington	59	-68	Hay Lakes	51	22
	Rolling Hills	113	N.P.	Heisler	44	92
	Langdon	41	N.P.	New Norway	63	-51
				Amisk	-14	6
				Bawlf	-15	102
GRADE VIII	Burdett	102	-35	Chipman	155	144
	Stirling	102	534	Edberg	15	-56
	Barnwell	-15	249	Warspite	11	3
	Clive	72	57	Cadomin	82	N.P.
	Glenwood	156	212	Calahoo	81	N.P.
	Morrin	84	146	Ardmore	145	N.P.
	Hillspring	26	163	Colington	37	N.P.
	Hillcrest	332	Part of C.N.P.	Round Hill	49	N.P.
	Frank	71	Part of C.N.P.	Joussard	162	N.P.
	Hilda	11	N.P.	Robb	67	N.P.
	Erskine	167	N.P.	Vimy	18	N.P.
	Exshaw	99	N.P.	Clandonald	6	N.P.
	Turin	50	N.P.	Islay	8	N.P.
	Ralston	362	N.P.	Ohaton	28	N.P.
				Canyon Creek	85	N.P.
				Heinsburg	22	N.P.
				Gwynne	39	N.P.

N.P.: Unincorporated, so no population available

N.B.: Positive values mean that the population is bigger than the commercial equipment would indicate

exclusively a function of the limited population in the settlement itself. As a result their centrality - their importance as a trading centre to the area around-is extremely limited.

Table 6 also shows the changes in the Population Excess values between the two dates where the populations at both census periods is known. Most of the centres for which accurate population is available in 1986 appear in the population excess category at both dates. However there is a tendency for many of the small centres with population excesses in 1985 to have shown small population deficiencies in 1977. The change is due primarily to the growth of population in these centres between 1976 and '86- a function of the increased population in the province as a whole - without a corresponding increase in commercial establishments in the smaller centres. This is frequently due to competition from surrounding centres or the isolation of the place.

Appendix C and D list all the Functional Index and Population Discrepancy Values for each place in the 1985 and 1977 analyses. It must be noted that the 1977 values are slightly different from those previously reported (Davies 1979) because the Appendices sharing Functional Indices etc. in the latter study was restricted to the largest 194 places.--principally Grades I to VII.

CONCLUSIONS

This study has concentrated upon identifying the general characteristics of service centre change in over 370 service centres in Alberta between 1977 and 1965. As far as possible a common set of centres and functions were used to facilitate the comparison, the former being restricted to places with at least three commercial outlets, the latter to eighty three types of business. Four major conclusions can be drawn in which quantitative evidence for each group and centre is provided in the report.

1. The great majority of commercial types showed substantial increases in number of outlets over the period, increases greater than that recorded by population.

2. Most of the increase was associated with the larger places: there was a centralization that led to the substantial strengthening of the position of the larger nodes whereas most of the Grade VII and VIII centres experienced, at best, marginal increases. Many of the middle range centres incresed their status by 1985 compared to their 1977 importance.

3. Marked regional patterns in the distribution of these changes were identified. The major gains were associated with the immediate hinterlands of the metropolitan areas, with the major transportation corridors and with some of the northernresource towns. It must be noted that the comparison of 1977 and 1985 data do not allow the annual tracing of commercial sector changes.- rather it provides a summary of the changes between these dates.

4. Detailed calculations of the Functional Index and Population Deficiency Values for each place for 1977 and 1985 provide a summary of the service centre development relating population change and commercial outlets (Appendix C and D).

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APPENDIX A

Changes in Grades of Centres: 1977 and 1985 Classifications
A. Southern Alberta

1985 Grades	Equivalent Grade in 1977 Establishment Numbers			1977 Grades				Changes in 1977			
	Place	1977	1985	Difference	Place	1977	1985	Difference	Place	1977	1985	Difference
GRADE II Regional	II Regional											
	Red Deer	1505	2138	+633								
	Lethbridge	1758	2305	+547								
	Medicine Hat	1120	1641	+521								
GRADE III Sub-Regional	III Sub-Regional				From IV District							
	Brooks	326	466	+140	Lacombe	169	290	+121				
	Rocky Mtn. H.	225	323	+98	Olds	181	293	+112				
	Taber	248	310	+62	High River	180	267	+87				
	Drumheller	265	323	+60	Innisfail	163	244	+81				
	Stettler	255	309	+54	Claresholm	165	218	+53				
	IIIb Specialized											
	Banff	314	402	+88								
GRADE IV District	IV District				From V Large Town				From V Large Towns			
	Canmore	124	251	+127	Airdrie	92	280	+188	Okotoks	94	212	+118
	Pincher Crk.	159	202	+63	Cochrane	113	226	+113	Sundre	86	135	+49
	Hanna	135	175	+40	Sylvan Lake	91	152	+61	Three Hills	79	123	+44
	Cardston	142	164	+22	Strathmore	102	161	+59	Coronation	69	108	+39
	Ft. MacLeod	152	164	+12	Coaldale	110	154	+44				
					Didsbury	96	140	+44				
					Nanton	82	111	+29				
					Bassano	63	91	+28				
					Blairmore	119	130	+21				
					Vulcan	103	117	+14				
GRADE V Sub-District	V Large Towns				From VI Small Towns				From VIIb Specialized Minor Ser			
	Redcliff	74	111	+37	Picture Butte	48	82	+34	Turner Valley	36	58	+22
	Eckville	59	92	+33	Oyen	60	72	+12	Beiseker	34	47	+13
	Bow Island	73	94	+21	Magrath	35	44	+9	Alix	36	47	+11
	Crossfield	64	85	+21	Raymond	61	68	+7				
	Trochu	51	65	+14	Carstairs	59	66	+7				
	Vauxhall	66	70	+4	Consort	41	47	+6				
					Bentley	49	54	+5				
					Castor	59	64	+5				
					Milk River	56	58	+2				
					Coleman	42	42	0				
GRADE VI Large Local Service					From VIIa Specialized Service							
					Bowden	31	44	+13				
					Black Diamond	38	45	+7				
					Blackfalds	39	48	+7				
					Penhold	28	31	+3				
					From VIIb Minor Service							
					Bragg Creek	18	39	+21				
					Delburne	25	40	+11				
					Foremost	28	38	+10				
					Acme	25	33	+8				
					Carbon	22	30	+8				
					Bellevue	23	28	+5				
GRADE VII Local Service	VIIa Specialized Service				From VIII Hamlet							
	Waterton	19	44	+25	Coalhurst	6	19	+13				
	Lake Louise	19	26	+7	Langton	6	17	+11				

Appendix A

Changes in Grades of Centres: 1977 and 1985 Classifications
A. Southern Alberta

1985 Grades		Equivalent Grade in 1977 Establishment Number			1977 Grades						Changes in 1977					
		Place	1977	1985	Difference	Place	1977	1985	Difference	Place	1977	1985	Difference
GRADE VII	**VIIa Specialized Service**				**From VIII Hamlet**								
Local Service	Waterton	19	44	+25	Coalhurst	6	19	+13					
	Lake Louise	19	26	+7	Langdon	6	17	+11					
					Cremona	13	21	+8					
	VIIb Minor Service				Veteran	14	21	+7					
					Rolling Hills	6	13	+7					
	Linden	24	35	+11	Longview	14	21	+7					
	Coutts	23	31	+8	Grassy Lake	8	14	+6					
	Warner	21	27	+6	Torrington	9	14	+5					
	Duchess	18	23	+5	Gleichen	12	17	+5					
	Barons	15	17	+2	Irricana	13	17	+4					
	Stavely	23	25	+2	Hussar	10	14	+4					
	Blackie	17	18	+1	Delia	12	16	+4					
	Cowley	17	18	+1	Mirror	14	18	+4					
	Standard	16	16	0	Manyberries	4	8	+4					
	Rockyford	22	21	-1	Carseland	7	11	+4					
	Granum	18	15	-3	Carmangay	11	14	+3					
	Nobleford	19	15	-4	Youngstown	8	11	+3					
	Tilley	20	16	-4	Lomond	14	17	+3					
	Irvine	17	12	-5	Donalda	14	17	+3					
	Champion	19	13	-7	Halkirk	4	6	+2					
					Spruce View	12	14	+2					
					Enchant	6	8	+2					
					Wimbourne	5	7	+2					
					Pine Lake	14	15	+1					
					Arrowhead	8	9	+1					
					Benalto	6	7	+1					
					Rosemary	9	10	+1					
					Milo	8	9	+1					
					Cluny	5	6	+1					
					Empress	10	10	0					
					Big Valley	15	15	0					
					Cereal	14	14	0					
					Shaunghessy	11	8	-3					
					Lesliеville	12	9	-3					
					Elnora	16	12	-4					
GRADE VIII	**VIII Hamlet**				**Down From VIIb Minor Service**								
Minor Service	Dunmore	3	8	+5	DeWinton	16	21	+5					
	Burdett	8	12	+4	Stirling	12	10	-2					
	Mountain View	5	9	+4	Lundbreck	12	8	-4					
	Condor	3	6	+3									
	Gadsby	3	6	+3	**Unclassified 1977**								
	Barnwell	8	10	+2									
	Millarville	6	7	+1	Cayley	3	6	+3					
	Botha	6	7	+1	Bracket	3	5	+2					
	Erskine	5	6	+1	Pincher Stn.	3	4	+1					
	Glenwood	5	6	+1	Mossleigh	3	3	0					
	Hilda	5	6	+1	Walsh	3	3	0					
	Diamond City	4	5	+1									
	Nacmine	3	4	+1									
	East Coulee	3	4	+1									
	Elkwater	3	4	+1									
	Iron Spring	7	7	0									
	Etzikom	5	5	0									
	Turin	4	4	0									
	Compeer	4	4	0									
	Madden	3	3	0									
	Huxley	3	3	0									
	Sibbald	3	3	0									
	Alliance	3	3	0									
	Westward Ho	3	3	0									
	Acadia Valley	7	6	-1									
	Rumsey	6	5	-1									
	Gull Lake	5	4	-1									
	Spring Coulee	4	3	-1									
	Hillcrest	9	7	-2									
	Standoff	7	7	-2									
	Wrentham	6	4	-2									
	Hays	6	4	-2									
	Hill Spring	6	4	-2									
	Halston	5	3	-2									
	Clive	11	8	-3									
	Frank	10	7	-3									
	Morrin	8	5	-3									
	Craigmyle	6	3	-3									
	Swalwell	8	4	-4									
	Rosedale	14	9	-5									
	Byemoor	9	3	-6									

APPENDIX A

Changes in Grades of Centres: 1977 and 1985 Classifications
B. Northern Alberta

1985 Grades	Place	Equivalent Grade in 1977 Establishment Numbers 1977	1985	Difference
GRADE II Regional	II Regional			
	Grande Prairie	731	1291	+560
	Sherwood Park	524	848	+324
GRADE III Sub-Regional	III Sub-Regional			
	Lloydminister	435	759	+314
	Camrose	425	621	+196
	Spruce Grove	224	404	+180
	Wetaskiwin	285	468	+173
	Leduc	279	419	+140
	Peace River	269	402	+133
	Ft. Sask.	223	343	+120
	Drayton Valley	229	333	+104
	Hinton	264	364	+100
	Edson	280	373	+93
	Westlock	226	286	+60
GRADE IV District	IV District			
	Slave Lake	146	237	+91
	Jasper	125	196	+71
	Wainwright	162	226	+64
	Stony Plain	143	207	+64
	High Prairie	116	177	+61
	Fairview	116	175	+59
	Valleyview	134	169	+35
GRADE V Sub-District				

1977 Grades

Changes in 1977 Place	1977	1985	Difference
From III Sub-Regional			
St. Albert	411	755	+344
Ft. McMurray	418	756	+338
From IV District			
Bonnyville	164	277	+113
St. Paul	206	296	+90
Vermillion	142	296	+87
Barrhead	179	265	+86
Grande Centre	158	225	+67
Ponoka	196	260	+64
Athabasca	141	202	+61
Vegreville	189	226	+37
Down From III Sub-Regional			
Whitecourt	192	253	+61
From V Large Towns			
Nisku	68	187	+119
Morrinville	86	165	+79
Lac La Biche	101	163	+62
Devon	87	139	+52
Grimshaw	74	126	+52
Rimbey	92	142	+50
Manning	79	128	+49
High Level	116	160	+44
Redwater	78	100	+22
Provost	90	111	+21
Grande Cache	106	124	+18
From VI Small Towns			
Falher	63	91	+28
Elk Point	48	75	+27
Lamont	44	68	+22
Fox Creek	55	76	+21
Bashaw	62	70	+8
Killam	46	54	+8
Daysland	42	46	+8
Thorsby	54	54	0
Hardisty	35	34	-1
Legal	41	35	-6

Place	1977	1985	Difference
From VI Small Towns			
Beaverlodge	59	120	+61
Tofield	66	108	+41
Onoway	46	82	+36
Mayerthorpe	60	94	+34
Smoky Lake	48	82	+34
Swan Hills	55	88	+33
Two Hills	52	83	+31
Spirit River	58	82	+24
Viking	65	88	+23
From VIIa Specialized Service			
Evansburg	34	64	+30
Forestburg	44	44	0
From VIIb Minor Service			
Hythe	86	56	+30
Warburg	20	49	+29
Sexsmith	32	57	+25
Thorhild	27	51	+24
Boyle	30	53	+23
Gibbons	25	44	+19
Mannville	30	47	+17
Breton	24	41	+17
Glendon	20	36	+16
La Crete	26	50	+14
Calmar	38	49	+11
Andrew	26	33	+7
McLennan	27	33	+6
Holden	29	35	+6
Cold Lake	41	43	+2
Myrnam	26	26	0
Vilna	42	35	-7
Mundare	38	29	-9
From VIII Hamlet			
Beaumont	14	60	+46

B. Northern Alberta

1985 Grades

1977 Grades

Equivalent Grade in 1977 Establishment Numbers

1985 Grades	Place	1977	1985	Difference
GRADE VI Large Local Service	VI Small Towns			
	Marwayne	24	32	+8
	Edgerton	25	31	+6
	Ryley	20	24	+4
	Sedgewick	37	38	+1
	Sangudo	40	36	-4
GRADE VII Local Service	VIIb Minor Service			
	*Peers	ND	25	+23
	Entuhistle	17	35	+18
	Nampa	15	32	+17
	Hines Creek	17	30	+13
	Rainbow Lake	19	30	+11
	Ft. Chipewyan	13	23	+10
	Wanham	11	18	+9
	Girouxville	15	23	+8
	Eaglesham	14	22	+8
	Debolt	14	21	+7
	Bon Accord	20	25	+5
	Alberta Beach	19	24	+5
	Waskatenau	18	23	+5
	Donnelly	14	19	+5
	Kitscoty	15	19	+4
	Innisfree	18	22	+4
	Niton Junction	22	26	+4
	Wildwood	28	32	+4
	Mulhurst	13	16	+3
	Mallaig	15	17	+2
	Worsley	12	12	0
	Raduay	14	14	0
	Ma-Me-O Beach	13	10	-3
	Kinuso	19	15	-4
	Willingdon	22	16	-6
	Others			
	Ellerslie	N/A		
GRADE VIII Minor Service	VIII Hamlet			
	Grassland	4	10	+6
	Colinton	4	9	+5
	Bluffton	8	11	+3
	Calahoo	6	9	+3
	Duffield	6	9	+3
	Rosalind	5	8	+3
	Rollyview	3	6	+3
	Minburn	3	6	+3
	Keg River	3	6	+3
	*Robb	5	8	+3

Changes in 1977

Place	1977	1985	Difference
From VIIa Specialized Service			
Ardrossan	44	141	+97
Millet	33	63	+30
Namao	62	64	+2
From VIIb Minor Service			
Rycroft	31	50	+19
Beruyn	22	36	+14
Hughenden	21	34	+13
Bruderheim	20	32	+12
Clyde	22	27	+5
Irma	26	24	-2
VIII Hamlet			
Wabamun	13	31	+18
Jarvie	4	22	+18
Hobbema	16	33	+17
Newbrook	6	21	+15
Alliance	6	20	+14
Ft. Assiniboine	12	23	+11
Winfield	15	25	+10
Blue Ridge	6	17	+9
Ashmont	8	17	+9
Clairmont	8	16	+8
Rochester	9	17	+8
Wandering River	6	13	+7
La Glace	4	11	+7
Tomahawk	7	14	+7
Smith	9	15	+6
Chauvin	11	17	+6
Czar	8	13	+5
New Sarepta	15	18	+3
Hairy Hills	8	11	+3
Hay Lakes	8	11	+3
Bruce	7	9	+2
Derwent	7	9	+2
Lodgepole	8	10	+2
Brownvale	6	8	+2
Baulf	8	10	+2
Alder Flats	11	11	0
Strome	9	9	0
Heisler	7	7	0
New Norway	10	10	0
Amisk	8	9	-1
Buck Lake	13	11	-2

APPENDIX A

Changes in Grades of Centres: 1977 and 1985 Classifications
B. Northern Alberta

1985 Grades		Equivalent Grade in 1977 Establishment Numbers											
		1977 Grades											
		Changes in 1977											
	Place	1977	1985	Difference	Place	1977	1985	Difference	Place	1977	1985	Difference	
GRADE VIII Minor Service	VIII Hamlet												
	Grassland	4	10	+6									
	Colinton	4	9	+5									
	Bluffton	8	11	+3									
	Calahoo	6	9	+3									
	Duffield	6	9	+3									
	Rosalind	5	8	+3									
	Rollyview	3	6	+3									
	Minburn	3	6	+3									
	Keg River	3	6	+3									
	*Robb	2	5	+3									
	Darwell	5	7	+2									
	Edberg	4	6	+2									
	Roundhill	4	6	+2									
	Rochfort Bridge	3	5	+2									
	Beauvallon	3	5	+2									
	Kinsella	8	9	+1									
	Seba Beach	14	15	+1									
	Dewberry	9	10	+1									
	Sunnybrook	5	6	+1									
	Faust	5	6	+1									
	Warspite	5	6	+1									
	Paradise Valley	5	6	+1									
	Joussard	4	5	+1									
	Gunn	3	4	+1									
	Fabyan	3	4	+1									
	Ardmore	7	7	0									
	Lavoy	7	7	0									
	*Cadomin	6	6	0									
	Armena	3	3	0									
	Vimy	5	5	0									
	Woking	5	5	0									
	Ohaton	4	4	0									
	Villeneuve	3	3	0									
	Alcomdale	3	3	0									
	Meeting Crk.	3	3	0									
	Blackfoot	3	3	0									
	Faucett	10	9	-1									
	Chipman	8	7	-1									
	Islay	6	5	-1									
	Canyon Creek	5	4	-1									
	Ranfurly	5	4	-1									
	Gwynne	5	3	-2									
	St. Lina	5	3	-2									
	Westerose	8	6	-2									
	Cherhill	6	4	-2									
	Heinsburg	6	4	-2									
	St. Michael	5	3	-2									
	Pickardville	7	4	-3									
	Galahad	11	8	-3									
	Ferintosh	8	5	-3									
	Clandonald	8	5	-3									
	Spedden	7	4	-3									

* Not classified in 1977 grouping. Estimated data.

Appendix B Technical Definitions and Calculations

(i) Definitions

- n = number of different functional (or establishment) types used in the study
- T_i = total number of establishments in each functional type or category i
- i = any functional type
- p = any place or town
- Nip = number of establishments of functional type i in town p
- Sp = size of population of any town p
- A = total population of the area (A) of study, i.e. province

(ii) Measurements or Calculations

Location Coefficients (Li)

Li measures the centrality or central place importance of any one outlet of a functional type i. It weights each outlet according to the relative frequency of occurance of the functional type according to the principle that the fewer the outlets the greater the centrality of each outlet.

$$Li = \frac{1}{100} \cdot Ti$$

Centrality Value (Cip)

Cip measures the centrality or central place importance of any functional type i in town p. It simply weights the location coefficient by the number of outlets of this type in town p.

$$Cip = Nip\ (li) \quad \text{or} \quad Nip\ \frac{1}{100} \cdot Ti$$

Functional Index (Fp)

Fp measures the total centrality of any town p. It represents a summary measure of the central place importance of a centre based on the functional complexity of the place.

$$Fp = \sum_{i=1}^{n} (Cip)$$

Population Coefficient (Pp)

Pp measures the relative importance of any town p in relation to the total population (A) of the study area.

$$Pp = \frac{Sp}{A} \cdot 100$$

Functional Imbalance (Ip)

Ip measures the extent to which any centre p has relatively more population in study area terms (pp) than is justified by its functional importance as measured by the relative size of the Functional Index (Fp) in the study area.

$$Ip = Pp - \frac{Fp}{n} \cdot 100$$

APPENDIX Ca 1985/6

Southern ALBERTA Functional INDEX calculations and Population Discrepancies (1985)
on the basis of commercial establishments

codes				place	1986 pop.	functional index	coeff	pop. coeff	diff.	pop excess/defic.
GRADE 2(1985)										
O	02	S	2	LET	LETHBRIDGE	58841.	328.539	3.958	2.487	-1.471	-34805.4897
R	03	S	3	RED	RED DEER	54425.	269.920	3.252	2.300	-0.952	-22512.7019
M	04	S	4	MED	MED HAT	41804.	222.698	2.683	1.767	-0.916	-21673.5476
GRADE 3											
M	05	S	5	BRO	BROOKS	9464.	64.104	0.772	0.400	-0.372	-8809.0365
C	07	S	6	DRU	DRUMHELLER	6366.	44.976	0.542	0.269	-0.273	-6453.9957
R	08	S	7	ROC	ROCKY MTN	5182.	44.250	0.533	0.219	-0.314	-7430.8571
O	09	S	8	TAB	TABER	6382.	40.035	0.482	0.270	-0.213	-5029.4391
R	10	S	9	STE	STETTLER	5147.	43.931	0.529	0.218	-0.312	-7375.0048
R	12	S	10	LAC	LACOMBE	6080.	41.458	0.499	0.257	-0.243	-5737.2294
C	14	S	11	HIG	HIGH RIVER	5096.	37.124	0.447	0.215	-0.232	-5485.7361
O	18	S	13	CLA	CLARESHOLME	3382.	31.758	0.383	0.234	-0.149	-3517.2513
R	11	S	14	OLD	OLDS	4871.	36.601	0.381	0.143	-0.238	-5625.6457
C	06			BAN	BANFF	5644.	36.377	0.438	0.206	-0.232	-5497.7445
GRADE 4							46.940	0.566	0.239	-0.327	-7735.7167
O	25	S	16	COA	COALDALE	4796.	20.359	0.245	0.203	-0.043	-1007.2042
C	13	S	17	AIR	AIRDRIE	10390.	32.526	0.392	0.439	0.047	1118.8903
C	15	S	18	CAN	CANMORE	4182.	25.345	0.305	0.177	-0.129	-3042.2342
C	17	S	19	COC	COCHRANE	4190.	25.257	0.304	0.177	-0.127	-3009.1291
C	19	S	20	OKO	OKOTOKS	5214.	27.107	0.327	0.220	-0.106	-2512.5850
O	20	S	21	PIN	PINCHER CK	3800.	25.234	0.304	0.161	-0.143	-3392.5819
P	21	S	22	HAN	HANNA	3017.	23.955	0.289	0.128	-0.161	-3811.0983
O	22	S	23	FOR	FT MACLEOD	3123.	22.189	0.267	0.132	-0.135	-3201.7899
O	23	S	24	CAR	CARDSTON	3497.	20.951	0.252	0.148	-0.105	-2474.9715
C	24	S	25	STR	STRATHMORE	3544.	19.076	0.230	0.150	-0.080	-1893.4252
R	26	S	26	SYL	SYLVAN LK	3937.	19.775	0.238	0.166	-0.072	-1699.7827
R	27	S	27	DID	DIDSBURY	3184.	18.018	0.217	0.135	-0.083	-1951.9279
R	28	S	28	SUN	SUNDRE	1712.	15.727	0.189	0.072	-0.117	-2770.7268
O	29	S	29	ACRO	CROWSNEST	6912.	18.593	0.224	0.295	0.068	1612.3669
C	30	S	30	THR	THREE HILS	2528.	16.660	0.201	0.107	-0.094	-2220.7806
O	31	S	31	VUL	VULCAN	1420.	16.232	0.196	0.060	-0.136	-3206.6299
O	33	S	32	NAN	NANTON	1562.	15.627	0.188	0.066	-0.122	-2892.2414
R	34	S	33	COR	CORONATION	1310.	14.142	0.170	0.055	-0.115	-2720.8965
M	37	S	34	BAS	BASSANO	1186.	14.272	0.172	0.050	-0.122	-2881.9968
GRADE 5											
M	32	S	35	RED	REDCLIFF	3834.	10.903	0.131	0.162	0.031	726.1458
R	43	S	36	CAR	CARSTAIRS	1629.	7.294	0.088	0.069	-0.019	-450.0379
R	45	S	37	CAS	CASTOR	1030.	8.546	0.103	0.044	-0.059	-1405.9163
O	54	S	38	MAG	MAGRATH	1637.	5.077	0.061	0.069	0.008	189.8019
O	56			COL	COLEMAN	0.	6.091	0.073	0.000	-0.073	-1736.1720
M	35		40	BOW	BOW ISLAND	1650.	13.163	0.159	0.070	-0.089	-2102.0786
R	36	S	41	ECK	ECKVILLE	853.	9.473	0.114	0.036	-0.078	-1847.1702
R	38	S	42	CRO	CROSSFIELD	1402.	10.344	0.125	0.059	-0.065	-1546.5016
O	39	S	43	PIC	PIC BUTTE	1576.	9.758	0.118	0.067	-0.051	-1205.5174
P	40	S	44	OYE	OYEN	970.	12.154	0.146	0.041	-0.105	-2485.4274
O	41	S	45	VAU	VAUXHALL	991.	8.027	0.097	0.042	-0.055	-1296.9417
O	42	S	46	RAY	RAYMOND	2957.	6.691	0.081	0.125	0.044	1049.9198
C	44	S	47	TRO	TROCHU	892.	10.317	0.124	0.038	-0.087	-2048.8504
O	46	S	48	TUR	TURNER VAL	127.	9.178	0.111	0.005	-0.105	-2488.9546
R	47	S	49	MIL	MILK RIVER	351.	7.888	0.095	0.036	-0.059	-1387.4418
C	48	S	50	BEN	BENTLEY	841.	6.468	0.078	0.036	-0.042	-1002.6971
P	50	S	51	BEI	BEISEKER	503.	6.919	0.083	0.021	-0.062	-1469.1226
R	51	S	52	CON	CONSORT	674.	5.486	0.066	0.038	-0.028	-889.6858
R	52	S	53	ALI	ALIX	793.	6.633	0.080	0.034	-0.046	-1097.7000
GRADE 6											
R	49	S	54	BLA	BLACKFALDS	1688.	7.766	0.094	0.071	-0.022	-525.7387
C	53	S	55	BLA	BLACK DIAM	1386.	5.023	0.061	0.063	0.002	54.2855
M	57	S	56	FOR	FOREMOST	595.	4.256	0.051	0.025	-0.026	-618.1271
R	59	S	57	DEL	DELBURNE	577.	5.643	0.068	0.024	-0.044	-1031.5538
C	60			BRA	BRAGG CRK	0.	3.701	0.045	0.000	-0.045	-1054.9602
R	61	S	59	CAR	CAROLINE	364.	3.298	0.040	0.015	-0.024	-576.0128
C	63	S	60	ACM	ACME	457.	4.648	0.056	0.019	-0.037	-867.9348
R	65	S	61	PEN	PENHOLD	1580.	5.896	0.047	0.067	0.020	462.5105
C	66	S	62	CAR	CARBON	429.	4.376	0.053	0.018	-0.035	-818.2860
O	67			BEL	BELLEVUE	0.	2.896	0.035	0.000	-0.035	-825.3919
R	55	S	64	BOW	BOWDEN	967.	5.998	0.072	0.041	-0.031	-742.7483
GRADE 7											
O	58			WAT	WATER PARK	107.	4.633	0.056	0.005	-0.051	-1213.6142
C	62	S	66	LIN	LINDEN	417.	2.896	0.035	0.018	-0.017	-403.4320
O	64	S	67	COU	COUTTS	359.	1.467	0.018	0.015	-0.003	-59.0339
O	68	S	68	WAR	WARNER	435.	2.190	0.026	0.013	-0.008	-189.2311

S. Alta 1985/6

Ca cont'd

O	70	S	69	STA	STAVELY	454.	3.069	0.037	0.019	-0.018	-420.6730
M	71	S	70	DUC	DUCHESS	430.	1.857	0.022	0.018	-0.004	-99.3674
C	72	S	71	LON	LONGVIEW	276.	1.252	0.015	0.012	-0.003	-80.7476
C	73	S	72	ROC	ROCKYFORD	293.	1.472	0.020	0.012	-0.008	-183.5165
C	74	S	73	VET	VETERAN	312.	2.125	0.026	0.013	-0.012	-292.9560
C	78	S	74	BLA	BLACKIE	266.	1.297	0.016	0.011	-0.004	-103.7073
R	79	S	75	MIR	MIRROR	508.	2.443	0.029	0.021	-0.008	-188.4370
O	80	S	76	COW	COWLEY	290.	0.943	0.011	0.012	-0.001	21.3097
O	81	S	77	BAR	BARONS	290.	1.711	0.021	0.012	-0.008	-197.7716
C	82	S	78	GLE	GLEICHEN	327.	1.624	0.020	0.014	-0.006	-135.9298
	83			LAN	LANGDON	0.	1.458	0.015	0.000	-0.015	-358.7057
C	84	S	80	LOM	LOMOND	177.	2.713	0.033	0.007	-0.025	-596.2300
M	85	S	81	TIL	TILLEY	352.	1.065	0.013	0.015	-0.002	-48.3256
C	86	S	82	DON	DONALDA	249.	2.213	0.027	0.011	-0.016	-381.8501
O	87	S	82	STA	STANDARD	331.	1.935	0.023	0.014	-0.009	-219.5634
M	89	S	84	DEL	DELIA	208.	1.638	0.020	0.009	-0.011	-259.0071
R	90			PIN	PINE LAKE	0.	2.048	0.025	0.000	-0.025	-583.6350
O	91	S	86	NOB	NOBLEFORD	531.	1.247	0.015	0.022	-0.007	175.4525
R	92	S	87	BIG	BIG VALLEY	295.	1.384	0.017	0.012	-0.004	-99.4992
C	93	S	88	TOR	TORRINGTON	209.	0.972	0.012	0.009	-0.003	-68.1198
O	94	S	89	CAR	CARMANGEY	340.	1.513	0.018	0.010	-0.008	-191.9669
O	95	S	90	GRA	GRASS LAKE	235.	1.059	0.013	0.010	-0.003	-66.9949
C	96	S	91	HUS	HUSSAR	167.	1.597	0.019	0.007	-0.012	-288.3463
P	98	S	92	CER	CEREAL	243.	1.530	0.018	0.010	-0.008	-193.1458
O	99	S	93	CHA	CHAMPION	350.	1.405	0.017	0.015	-0.002	-49.7262
O	10	S	94	ARR1	ARROWWOOD	137.	0.729	0.009	0.006	-0.003	-70.7772
M	10	S	95	IRV3	IRVINE	301.	0.591	0.007	0.013	0.006	132.4076
R	75	S	96	CRE	CREMONA	356.	3.989	0.048	0.015	-0.033	-781.0158
C	69			LAK	LK LOUISE	0.	2.868	0.035	0.000	-0.035	-817.4515
O	77	S	98	COA	COALHURST	1252.	1.643	0.020	0.053	0.033	783.7600
C	88	S	99	IRR	IRRICANA	669.	1.705	0.021	0.028	0.008	182.9748
R	10			SPR0	SPRUCEVIEW	0.	1.233	0.015	0.000	-0.015	-351.5250
M	10			ROL4	ROLLG HILS	0.	1.300	0.016	0.000	-0.016	-370.4858
O	97	5102		GRA	GRANUM	352.	1.237	0.015	0.015	-0.000	-0.6662
R	10	5103		ELN5	ELNORA	245.	1.810	0.022	0.010	-0.011	-270.8825
O	10			CAR6	CARSELAND	0.	1.445	0.017	0.000	-0.017	-411.9210
P	10	5105		YOU7	YOUNGSTOWN	294.	0.902	0.011	0.012	0.002	37.0184
M	11	5106		ROS0	ROSEMARY	321.	0.646	0.008	0.014	0.006	136.8584
O	11	5107		MIL1	MILO	117.	1.007	0.012	0.005	-0.007	-170.0980
P	11	5108		EMP2	EMPRESS	229.	1.775	0.021	0.010	-0.012	-276.8784
P	11			LES5	LESLIEVIL	0.	1.664	0.020	0.000	-0.020	-474.3126
O	11			SHA8	SHAUGHNESY	0.	0.728	0.009	0.000	-0.009	-207.5906
C	12			WIM0	WIMBOURNE	0.	0.403	0.005	0.000	-0.005	-114.9280
O	12			ENC6	ENCHANT	0.	1.245	0.015	0.000	-0.015	-354.7665
M	12			MAN8	MANYBERRYS	0.	0.577	0.007	0.000	-0.007	-164.4610
C	12	5114		CLU9	CLUNY	95.	0.316	0.004	0.004	0.000	4.8163
R	13	5116		HAL5	HALKIRK	143.	0.918	0.011	0.000	-0.011	-261.7740
GRADE		8					0.908	0.011	0.006	-0.005	-115.9575
C	76			DEW	DEWINTON	0.	1.955	0.024	0.000	-0.024	-557.3689
M	10	5118		BUR2	BURDETT	276.	1.099	0.013	0.012	-0.001	-35.1938
O	10	5119		STI8	STIRLING	796.	0.912	0.011	0.034	0.023	535.9181
O	10	4120		BAR9	BARNWELL	402.	0.534	0.006	0.017	0.011	249.7352
P	11			ROS3	ROSEDALE	0.	0.422	0.005	0.000	-0.005	-120.4126
R	11	5122		CLI4	CLIVE	356.	1.047	0.013	0.015	0.002	57.7044
O	11			MTN6	MTN VIEW	0.	1.080	0.013	0.000	-0.013	-307.9135
O	11			LUN7	LUNDBRECK	0.	0.741	0.009	0.000	-0.009	-211.3018
M	12			DUN9	DUNMORE	0.	0.560	0.007	0.000	-0.007	-159.7622
O	12			MIL1	MILLARVIL	0.	0.489	0.006	0.000	-0.006	-139.5042
O	12			HIL2	HILL CREST	0.	1.273	0.015	0.000	-0.015	-362.8151
O	12			FRA3	FRANK	0.	1.276	0.015	0.000	-0.015	-363.7846
O	12			STA4	STANDOFF	0.	0.862	0.010	0.000	-0.010	-245.7830
R	12	5131		IRO5	IRON SPR	0.	1.103	0.013	0.000	-0.013	-314.3755
C	13	5132		BOT8	BOTHA	180.	0.890	0.011	0.008	-0.003	-73.7329
O	13	5133		CAY0	CAYLEY	202.	0.710	0.009	0.009	-0.000	-0.5066
P	13			GLE1	GLENWOOD	304.	0.322	0.004	0.013	0.009	212.3448
P	13			HIL2	HILDA	0.	0.502	0.006	0.000	-0.006	-143.2221
R	13			ACA3	ACADIA V	0.	0.835	0.010	0.000	-0.010	-238.1408
R	13	5137		CON6	CONDOR	0.	0.649	0.008	0.000	-0.008	-179.4263
R	13			GAD7	GADSBY	35.	0.463	0.006	0.000	-0.006	-132.3755
C	13			ERS8	ERSKINE	0.	0.298	0.004	0.001	-0.004	-97.0254
O	14			EXS9	EXSHAW	0.	0.900	0.011	0.000	-0.011	-256.4367
O	14			DIA0	DIAMOND C	0.	0.270	0.003	0.000	-0.003	-76.9742
M	14			BRO1	BROCKET	0.	0.752	0.009	0.000	-0.009	-214.2668
P	14	5143		ETZ2	ETZIKOM	0.	0.398	0.005	0.000	-0.005	-113.5516
P	14	5144		MOR3	MORRIN	252.	0.370	0.004	0.011	0.006	146.5352
C	14			RUM4	RUMSEY	70.	0.473	0.006	0.003	-0.003	-64.7191
C	14			NAC5	NACMINE	0.	0.175	0.002	0.000	-0.002	-49.9185
C	14			SHA6	SHALWELL	0.	1.157	0.013	0.000	-0.013	-332.9547
O	14			EAS7	EASTCOULEE	0.	0.139	0.002	0.000	-0.002	-39.4983
O	14			WRE8	WRENTHAM	0.	0.267	0.003	0.000	-0.003	-76.1521
O	15			TUR9	TURIN	0.	0.486	0.006	0.000	-0.006	-138.5969
O	15	5151		HAY0	HAYS	243.	0.496	0.006	0.000	-0.006	-141.5022
O	15			HIL1	HILL SPRG	0.	0.246	0.003	0.010	0.007	183.0714
M	15			PIN2	PINCH STN	0.	0.625	0.008	0.000	-0.008	-173.0902
R	15			ELK3	ELKWATER	0.	0.250	0.003	0.000	-0.003	-71.2768
C	15			COM4	COMPEER	0.	0.302	0.004	0.000	-0.004	-85.0316
O	15			GUL5	GULL LAKE	0.	0.730	0.009	0.000	-0.009	-203.1375
C	15			MAD6	MADDEN	0.	0.198	0.002	0.000	-0.002	-56.3977
O	15			HUX7	HUXLEY	0.	0.069	0.001	0.000	-0.001	-19.6486
O	15			SPR8	SPRING COU	0.	0.130	0.002	0.000	-0.002	-37.1644
M	15			MOS9	MOSSLEIGH	0.	0.196	0.002	0.000	-0.002	-55.7518
P	16			RAL0	RALSTON	0.	0.268	0.003	0.000	-0.003	-76.3670
P	16			WAL1	WALSH	0.	0.088	0.001	0.000	-0.001	-25.1461
P	16			CRA2	CRAIGMYLE	0.	0.122	0.002	0.000	-0.002	-35.5762
R	16			SIB3	SIBBALD	0.	0.320	0.004	0.000	-0.004	-91.0732
R	16			ALT4	ALTARIO	0.	0.765	0.009	0.000	-0.009	-218.1686
	16			BYE5	BYEMOOR	0.	0.216	0.003	0.000	-0.003	-61.5909
	16			WES6	WESTWARD H	0.	0.178	0.002	0.000	-0.002	-50.7730

1986 population values are only available for the incorporated places-as of april 1987.

n.b. Population discrepancies are only accurate if 1986 population values exist-otherwise the commercial values are converted into pop.deficiencies

APPENDIX CU

Northern ALBERTA Functional INDEX calculations and Population Discrepancies 1985

on the basis of commercial establishments

codes			place	1986 pop.	functional index	coeff	pop. coeff	diff.	pop excess/defic.
GRADE 2(1935)									
X 02 4	2	GRA	GR PRAIRIE	26471.	153.804	1.853	1.119	-0.734	-17369.0854
E 03 4	3	SHE	SHERD PK	0.	104.344	1.258	0.000	-1.257	-29747.7828*
E 08 4	4	ST	ST ALBERT	36710.	103.456	1.246	1.552	0.305	7226.5674
L 05 4	5	FOR	F MCMURRAY	34949.	99.156	1.195	1.477	0.283	6685.7196
GRADE 3									
L 04 4	6	LLO	LLOYDMIN	10201.	83.039	1.000	0.431	-0.569	-13463.4365
B 07 4	7	CAM	CAMROSE	12968.	81.814	0.986	0.548	-0.438	-10352.2047
B 08 4	8	WET	WETASKIWAN	10071.	56.558	0.681	0.426	-0.256	-6050.1992
E 09 4	9	LED	LEDUC	13126.	50.179	0.605	0.555	-0.050	-1176.9271
E 10 4	10	SPR	SPRUCE GR	11918.	50.512	0.609	0.504	-0.105	-2479.8466
X 11 4	11	PEA	PEACE RIV	6288.	49.528	0.597	0.266	-0.331	-7829.5292
W 12 4	12	EDS	EDSON	7323.	47.239	0.569	0.310	-0.260	-6141.9830
W 13 4	13	HIN	HINTON	8629.	45.493	0.548	0.365	-0.183	-4338.3553
E 14 4	14	FOR	FT SASK	11983.	43.785	0.528	0.507	-0.021	-497.5403
E 15 4	15	DRA	DRAYTON VA	5290.	39.818	0.480	0.224	-0.256	-6059.8210
L 16 4	16	ST.	ST PAUL	5030.	39.812	0.480	0.213	-0.267	-6318.0785
W 17 4	17	WES	WESTLOCK	4532.	43.806	0.528	0.192	-0.336	-7954.5190
L 18 4	18	BON	BONNYVILLE	5470.	35.954	0.433	0.231	-0.202	-4778.3526
B 20 4	20	PON	PONOKA	5473.	37.958	0.457	0.169	-0.289	-6828.6312
L 24 4	21	VEG	VEGREVILLE	5276.	39.274	0.473	0.231	-0.242	-5721.6345
T 26 4	22	GRA	GR CENTER	3655.	32.612	0.393	0.223	-0.170	-4019.6787
L 23 4	23	VER	VERMILION	3879.	29.763	0.359	0.154	-0.204	-4828.6248
W 28 4	24	ATH	ATHABASCA	1970.	27.182	0.327	0.164	-0.164	-3868.8803
GRADE 4					27.448	0.331	0.083	-0.247	-5853.6756
L 25 4	25	WAI	WAINWRIGHT	4665.	27.567	0.332	0.197	-0.135	-3192.6624
X 31 4	26	HIG	HI PRAIRIE	2317.	24.102	0.290	0.119	-0.171	-4053.1281
E 34 4	27	MOR	MORINVILLE	5364.	21.433	0.258	0.227	-0.032	-745.2432
E 27 4	28	STO	STONY PL	5802.	25.382	0.306	0.245	-0.061	-1432.9805
W 21 4	29	WHI	WHITECOURT	5737.	32.692	0.394	0.242	-0.151	-3581.3669
L 22 4	30	SLA	SLAVE LAKE	5429.	27.261	0.328	0.229	-0.099	-2341.5299
W 29 4	31	JAS	JASPER	3774.	28.345	0.342	0.160	-0.182	-4305.4362
E 30 4	33	NIS	NISKU	0.	20.803	0.251	0.000	-0.251	-5929.6774
X 32 4	32	FAI	FAIRVIEW	2998.	28.328	0.341	0.127	-0.215	-5076.6102
X 33 4	34	VAL	VALLEYVIEW	1987.	18.652	0.225	0.084	-0.141	-3329.6877
X 36 4	35	HIG	HIGH LEVEL	3004.	20.631	0.249	0.127	-0.122	-2876.6329
X 40 4	36	MAN	MANNING	1144.	16.865	0.203	0.048	-0.155	-3663.0547
X 41 4	37	GRI	GRIMSHAW	2579.	17.557	0.212	0.109	-0.103	-2425.3986
X 43 4	38	BEA	BEAVERLODG	1808.	16.989	0.205	0.076	-0.128	-3034.6510
L 35 4	39	LAC	LAC LA BIC	2553.	21.316	0.257	0.108	-0.149	-3522.8479
B 37 4	40	RIM	RIMBEY	1786.	20.562	0.248	0.075	-0.172	-4074.8980
E 39 4	41	DEV	DEVON	3691.	20.673	0.249	0.156	-0.093	-2201.6204
L 45 4	42	TOF	TOFIELD	1483.	14.949	0.180	0.063	-0.117	-2778.1040
L 44 4	43	PRO	PROVOST	1725.	17.122	0.206	0.073	-0.133	-3155.4850
L 46 4	44	RED	REDWATER	1982.	13.091	0.158	0.084	-0.074	-1749.4004
L 50 4	45	VIK	VIKING	1160.	12.933	0.156	0.049	-0.107	-2526.3318
L 51 4	46	TWO	TWO HILLS	1127.	11.267	0.136	0.048	-0.088	-2084.5706
L 53 4	47	S10	SMOKY LAKE	1036.	11.676	0.141	0.044	-0.097	-2292.1210
X 54 4	48	SPI	SPIRIT RIV	1036.	12.379	0.149	0.046	-0.103	-2442.5473
W 42 4	49	GRA	GR CACHE	3646.	14.269	0.172	0.154	-0.018	-421.1894
E 47 4	50	MAY	MAYERTHORP	1414.	11.683	0.141	0.060	-0.081	-1916.0280
X 49 4	51	SWA	SWANHILLS	2403.	11.581	0.140	0.102	-0.038	-897.9178
L 52 4	52	ONO	ONOWAY	639.	11.549	0.139	0.027	-0.112	-2652.8730
GRADE 5									
L 56 4	53	ELK	ELK POINT	1318.	10.885	0.131	0.056	-0.075	-1784.5378
B 57 4	54	WAS	WASHAW	829.	10.275	0.124	0.035	-0.089	-2092.9012
X 48 4	55	FAL	FALHER	1198.	13.299	0.160	0.050	-0.110	-2612.7074
L 58 4	56	LAM	LAMONT	1576.	9.479	0.114	0.067	-0.048	-1125.8862
L 81 4	57	GLE	GLENDON	490.	6.054	0.073	0.020	-0.053	-1245.6633
E 55 4	58	THO	THORSBY	652.	9.137	0.110	0.027	-0.083	-1972.3540
B 66 4	59	KIL	KILLAM	1032.	7.628	0.092	0.044	-0.048	-1142.2311
L 67 4	60	BOY	BOYLE	678.	8.466	0.102	0.029	-0.073	-1735.1943
D 74 4	61	DAY	DAYSLAND	978.	8.913	0.107	0.029	-0.079	-1862.4160
E 75 4	62	GIB	GIBBONS	2335.	6.449	0.078	0.099	0.021	496.7956
B 76 4	63	FOR	FORESTBURG	724.	6.219	0.083	0.039	-0.044	-1048.1314
X 53 4	64	SEX	SEXSMITH	1256.	7.261	0.096	0.053	-0.043	-1013.2073
B 87 4	65	HAN	HARDISTY	943.	6.849	0.070	0.027	-0.043	-1025.1245
L 89 4	66	AND	ANDREW	492.	5.087	0.061	0.021	-0.040	-957.8745
X 90 4	67	MCL	MCCLENNAN	793.	5.642	0.068	0.042	-0.026	-615.1665
GRADE 6									
E 52 4	68	BEA	BEAUMONT	3244.	7.588	0.091	0.167	0.075	1781.2919
X 55 4	69	FOX	FOX CREEK	2068.	8.147	0.098	0.087	-0.011	-254.2527

N Alta 1985

E	60	4	70	EVA	EVANSBURG	750.	8.188	0.099	0.032	-0.067	-1584.2583
L	68	4	71	THO	THORHILD	431.	7.837	0.094	0.020	-0.074	-1752.4347
E	72	4	72	WAR	WARBURG	477.	5.403	0.065	0.020	-0.045	-1062.9994
L	73	4	73	MAN	MANNVILLE	778.	5.873	0.071	0.033	-0.038	-894.0585
E	78	4	74	BRE	BRETON	466.	4.509	0.054	0.020	-0.035	-812.3320
X	64	4	75	HYT	HYTHE	673.	6.276	0.076	0.028	-0.047	-1115.8377
E	71	4	76	CAL	CALMAR	1087.	5.231	0.063	0.046	-0.017	-404.1044
L	77	4	77	COL	COLD LAKE	3195.	6.384	0.077	0.135	0.058	1375.1840
L	83	4	78	HOL	HOLDEN	411.	4.442	0.054	0.017	-0.036	-855.2176
E	84	4	79	LEG	LEGAL	881.	3.721	0.045	0.037	-0.008	-177.6959
L	86	4	80	VIL	VILNA	325.	3.643	0.044	0.014	-0.030	-713.3692
L	10	4	81	MUN1	MUNDARE	545.	3.778	0.046	0.023	-0.022	-531.8141
L	10	4	82	MYRS	MYRNAM	383.	2.850	0.034	0.016	-0.018	-422.3365
X	70			LA	LA CRETE	0.	7.677	0.092	0.000	-0.092	-2183.1416
GRADE 6											
X	99			FT	FT VERMIL	0.	6.123	0.074	0.000	-0.074	-1745.2641
E	38			ARD	ANDROSSAN	0.	16.185	0.195	0.000	-0.195	-4613.2244
E	59			NAM	NAMAO	0.	8.268	0.100	0.000	-0.100	-2356.6804
B	61	4	86	MIL	MILLET	1520.	6.706	0.081	0.064	-0.017	-391.5203
X	69	5	88	RYC	RYCROFT	672.	5.975	0.072	0.028	-0.044	-1031.0829
B	79	4	89	SED	SEDGEWICK	877.	3.699	0.045	0.037	-0.008	-177.4828
X	30	4	90	SAN	SANGUDO	391.	3.453	0.042	0.017	-0.025	-593.3585
X	82	4	91	SER	BERWYN	661.	4.527	0.055	0.028	-0.027	-629.3161
L	88	4	92	HUG	HUGHENDEN	249.	2.941	0.035	0.011	-0.025	-589.2159
L	94	4	93	BRU	BRUDERHEIM	1131.	4.770	0.057	0.048	-0.010	-228.5497
L	96	4	94	EDG	EDGERTON	400.	4.136	0.050	0.017	-0.033	-779.0537
X	10	4	95	WEM2	WEMBLEY	1208.	3.347	0.040	0.051	0.011	253.9908
W	10	4	96	CLY3	CLYDE	446.	3.796	0.046	0.019	-0.027	-636.0334
L	11	4	97	PLA3	PLAMONDON	236.	2.793	0.034	0.010	-0.024	-559.9752
L	11	4	98	RYLO	RYLEY	500.	2.062	0.025	0.021	-0.004	-87.7120
L	10	4	99	IRM9	IRMA	484.	2.450	0.030	0.020	-0.009	-214.2579
B	11	4100		LOU2	LOUGHEED	258.	2.178	0.026	0.011	-0.015	-352.8611
L	93	4101		MAR	MARWAYNE	516.	3.744	0.045	0.022	-0.023	-551.1974
GRADE 7											
X	95	4102		NAM	NAMPA	464.	3.779	0.046	0.020	-0.026	-613.1543
E	97	4103		WAB	WABANUM	585.	3.028	0.036	0.025	-0.012	-278.0736
X	98	4104		HIN	HINES CRK	513.	4.510	0.054	0.022	-0.033	-772.6155
X	12	4105		NEW7	NEW SAREP	314.	2.049	0.025	0.013	-0.011	-270.0959
E	10	4106		BON6	BON ACCORD	1355.	2.732	0.033	0.057	0.024	576.2570
B	91			HOB	HOBBEMA	0.	2.738	0.033	0.000	-0.033	-780.4196
L	13			ASHO	ASHMONT	0.	1.329	0.016	0.000	-0.016	-378.7331
W	92	4109		WIL	WILDWOOD	377.	4.274	0.051	0.016	-0.036	-841.1356
L	11	4110		INN9	INNISFREE	219.	3.190	0.038	0.009	-0.029	-690.2109
E	85	4111		ENT	ENTWHISTLE	478.	2.482	0.030	0.020	-0.010	-229.3264
X	10	4112		RAIO	RAINBOW 6	575.	2.724	0.033	0.029	-0.004	-101.3600
W	10			NIT4	NITON JCTN	0.	2.634	0.032	0.000	-0.032	-750.7279
W	10			PEE7	PEERS	0.	2.373	0.029	0.000	-0.029	-676.5057
B	10			WIN8	WINFIELD	0.	2.001	0.024	0.000	-0.024	-570.4862
E	11	4113		ALB1	ALTA BEACH	425.	1.751	0.021	0.018	-0.003	-74.1899
L	11			FT 5	FT CHIPEWN	0.	2.565	0.031	0.000	-0.031	-731.0516
E	11	4114		WAS6	WASKATENAU	276.	2.957	0.036	0.012	-0.024	-565.8695
X	11	4115		GIR7	GIROUXVIL	367.	2.866	0.035	0.016	-0.019	-449.8522
W	11			JAR8	JARVIE	0.	2.701	0.033	0.000	-0.033	-769.9279
X	12	4118		EAGU	EAGLESHAM	197.	2.742	0.033	0.008	-0.025	-584.6328
L	15			NEW1	NEWBROCK	0.	2.781	0.034	0.000	-0.034	-792.5609
X	12			DEB2	DEIOLT	0.	3.132	0.038	0.000	-0.038	-893.7188
B	12	4120		ALL3	ALLIANCE	202.	2.138	0.026	0.009	-0.017	-407.3431
X	12	4117		DON4	DONELLY	305.	2.311	0.028	0.017	-0.011	-253.7947
L	12	4125		KIT5	KITSCOTY	231.	1.275	0.015	0.027	0.011	267.5361
X	12	4137		WAN6	WAINWAR	233.	1.890	0.023	0.010	-0.013	-305.6637
W	12			BLUR	BLUE RIDGE	0.	0.891	0.011	0.000	-0.011	-254.0058
L	12			MAL9	MALLAIG	0.	1.807	0.022	0.000	-0.022	-514.9582
X	13			CLA5	CLAIRMONT	0.	0.634	0.010	0.000	-0.010	-237.8231
W	13	4134		KIN7	KINUSO	282.	1.795	0.022	0.012	-0.010	-229.5175
W	13			SMIR	SMITH	0.	1.442	0.017	0.000	-0.017	-411.0453
L	14			WAN1	WANDERG R	0.	0.964	0.012	0.000	-0.012	-274.6407
L	14	4142		CZA2	CZAR	178.	0.975	0.012	0.008	-0.004	-99.9912
L	13	4121		CHA1	CHAUVIN	367.	2.201	0.027	0.016	-0.011	-261.2297
X	14			WOR3	WORSELEY	0.	2.122	0.026	0.000	-0.026	-604.9231
L	14	4144		HAI4	HAIRYHILLS	73.	0.755	0.009	0.003	-0.006	-142.3036
B	14			ALD6	ALDER FLAT	0.	1.364	0.016	0.000	-0.016	-383.9115
X	14			LA 9	LA GLACE	0.	1.262	0.015	0.000	-0.015	-359.7009
L	15			BRU7	BRUCE	0.	0.725	0.009	0.000	-0.009	-206.7777
W	13			ROC3	ROCHESTER	0.	2.340	0.028	0.000	-0.028	-666.9437
L	14	4146		RAD0	RADWAY	162.	1.521	0.018	0.007	-0.011	-271.6311
Z	14			BUC5	BUCK LAKE	0.	0.794	0.010	0.000	-0.010	-226.3077
B	15	4143		STR9	STROME	267.	0.564	0.007	0.011	0.004	109.1230
B	14	4124		HAY7	HAY LAKES	394.	0.955	0.012	0.012	0.001	21.2200
L	16	4149		DER3	DERWENT	149.	1.095	0.013	0.006	-0.007	-152.8291
B	15			MA 4	MA ME O 9	0.	0.443	0.005	0.000	-0.005	-126.3445

N. Alta 1985

X	15		LOD3	LODGEPOLE	0.	0.312	0.004	0.000	-0.004	-83.7942
W	11	4128	FOR4	FT ASSIGN	214.	0.373	0.002	0.009	-0.020	-462.4175
L	13	4126	WIL4	WILLINGDON	371.	0.772	0.033	0.016	-0.018	-419.1230
E	13		TOM9	TOMAHAWK	0.	1.363	0.016	0.000	-0.016	-377.1174
L	16	4152	AMI2	AMISK	212.	0.723	0.009	0.009	0.000	6.0224
Z	16		BRO8	BROWNVALE	0.	0.904	0.011	0.000	-0.011	-257.5896
B	17	4154	HEI0	HEISLER	213.	0.455	0.005	0.009	0.004	91.7599
Z	13		MUL2	MULHURST	0.	1.361	0.017	0.000	-0.017	-396.6243
B	15	4156	BAW0	BAWLF	375.	0.957	0.012	0.016	0.004	102.3354
E	15		ELL2	ELLERSLIE	0.	0.803	0.010	0.000	-0.010	-229.0222
B	15	4158	NEW5	NEW NORWAY	278.	1.155	0.014	0.012	-0.002	-51.2854
B	14		BLU8	BLUFFTON	0.	1.094	0.013	0.000	-0.013	-311.8591
GRADE 8										
E	15		CAL8	CALAHOO	0.	0.718	0.009	0.000	-0.009	-204.7732
L	16		KIN1	KINSELLA	0.	0.815	0.010	0.000	-0.010	-232.2504
L	17		ARD2	ARDMORE	0.	0.320	0.004	0.000	-0.004	-91.2175
E	13		SEB6	SEBA BEACH	0.	1.208	0.015	0.000	-0.015	-344.4393
L	15	4164	DEW1	DEWBERRY	214.	1.120	0.013	0.009	-0.004	-105.1046
L	15		GRA6	GRASSLAND	0.	0.738	0.009	0.000	-0.009	-210.2475
E	15		DUF7	DUFFIELD	0.	1.448	0.017	0.000	-0.017	-412.8104
W	16		COL0	COLINGTON	0.	0.369	0.004	0.000	-0.004	-105.0525
W	16		FAW4	FAWCETT	0.	0.862	0.010	0.000	-0.010	-245.8253
E	16	4169	GAL5	GALAHAD	190.	1.497	0.018	0.008	-0.010	-236.6351
B	16	4170	ROS6	ROSALIND	214.	0.557	0.007	0.009	0.002	55.0922
E	16		DAR9	DARWELL	0.	0.386	0.005	0.000	-0.005	-110.0194
L	17	4172	CHI1	CHIPMAN	239.	0.334	0.004	0.010	0.006	143.8710
L	17	4173	LAV3	LAVOY	126.	1.209	0.015	0.005	-0.009	-218.6587
E	17		SUN4	SUNNYBRK	0.	0.779	0.009	0.000	-0.009	-221.9219
B	17		ROL5	ROLLYVIEW	0.	0.969	0.012	0.000	-0.012	-276.1933
B	17		WES6	WESTERROSE	0.	0.474	0.006	0.000	-0.006	-135.0562
B	17	4177	EDB7	EDBERG	124.	0.631	0.008	0.005	-0.002	-55.7491
W	17		CAD8	CADOMIN	0.	0.229	0.003	0.000	-0.003	-65.2483
W	17		FAU9	FAUST	0.	0.306	0.004	0.000	-0.004	-87.2041
L	18	4180	MIN0	MINBURN	135.	0.353	0.004	0.006	0.001	34.4164
L	18	4181	WAR1	WARSPITE	97.	0.331	0.004	0.004	0.000	-2.7869
L	18	4182	PAR2	PARAD VAL	184.	0.490	0.006	0.008	0.002	44.3668
X	18		KEG3	KEG RIVER	0.	0.412	0.005	0.000	-0.005	-117.2941
B	18		ROU4	ROUNDHILL	0.	0.470	0.006	0.000	-0.006	-133.9655
E	18		ROC5	ROCHFORT B	0.	0.523	0.006	0.000	-0.006	-148.9683
B	18	4186	FER6	FERINTOSH	125.	0.448	0.005	0.005	-0.000	-2.7878
W	18		ROB7	ROBB	0.	0.763	0.009	0.000	-0.009	-217.4876
W	18		JOU8	JOUSSARD	0.	0.765	0.009	0.000	-0.009	-218.0235
W	18		VIM9	VIMY	0.	0.290	0.003	0.000	-0.003	-82.7809
L	19		CLA0	CLANDONALD	0.	0.456	0.005	0.000	-0.005	-129.9032
L	19		BEA1	BEAVALON	0.	0.450	0.005	0.000	-0.005	-128.2018
L	19		ISL2	ISLAY	0.	0.386	0.005	0.000	-0.005	-110.1176
X	19		WOK3	WOKING	0.	0.326	0.004	0.000	-0.004	-93.0396
E	19		CHE4	CHERHILL	0.	0.210	0.003	0.000	-0.003	-59.8419
E	19		GUN5	GUNN	0.	0.179	0.002	0.000	-0.002	-51.1292
Z	19		OHA6	OHATON	0.	0.327	0.004	0.000	-0.004	-93.3248
Z	19		CAN7	CANYON CR	0.	0.169	0.002	0.000	-0.002	-48.1722
W	19		PIC8	PICKARDVIL	0.	0.593	0.007	0.000	-0.007	-169.0996
L	19		FAB9	FABYAN	0.	0.284	0.003	0.000	-0.003	-80.9874
L	20		RAN0	RANFURLY	0.	0.349	0.004	0.000	-0.004	-99.5031
L	20		SPE1	SPEDDEN	0.	0.273	0.003	0.000	-0.003	-77.7197
E	20		HEI2	HEINSBURG	0.	0.139	0.002	0.000	-0.002	-39.5423
E	20		VIL3	VILLENEUVE	0.	0.554	0.007	0.000	-0.007	-157.8619
B	20		ALC4	ALCOMDALE	0.	0.229	0.003	0.000	-0.003	-65.2396
B	20		MEE5	MEETING CR	0.	0.088	0.001	0.000	-0.001	-25.1560
B	20		GWY6	GWYNNE	0.	0.402	0.005	0.000	-0.005	-114.5859
Z	20		ARM7	ARMENA	0.	0.272	0.003	0.000	-0.003	-77.5070
Z	20		BLA8	BLACKFOOT	0.	0.110	0.001	0.000	-0.001	-31.3183
L	21		ST 9	ST LINA	0.	0.180	0.002	0.000	-0.002	-51.3358
			ST 0	ST MICHAEL	0.	0.314	0.004	0.000	-0.004	-89.5111

*n.b. Population discrepancies are only accurate if 1986 population values exist-otherwise the commercial values are converted into pop.deficiencies

APPENDIX D4
SOUTHERN ALBERTA 1977
(Listed by 1985 classification of places)

place	1976 pop	1977 Functional INDEX	COEFF.	1976 POP.coeff.	DIFF.	POpulation Discrepancy
GRADE 2						
S002 LETHBRIDGE	46752.0	265.252	3.196	2.544	-0.652	-11988.1330
S003 RED DEER	32184.0	210.781	2.540	1.751	-0.789	-14493.4097
S004 MED.HAT	32811.0	166.614	2.007	1.785	-0.222	-4085.7433
S005 BROOKS	6339.0	47.344	0.570	0.345	-0.226	-4145.2747
GRADE 3						
S006 DRUMHELLER	6154.0	40.297	0.486	0.335	-0.151	-2769.8090
S007 ROCKY MTN	3432.0	34.134	0.411	0.187	-0.225	-4126.9102
S008 TABER	5296.0	38.577	0.465	0.288	-0.177	-3246.7906
S009 STETTLER	4182.0	41.071	0.495	0.228	-0.267	-4913.1375
S010 LACOMBE	3888.0	27.905	0.336	0.212	-0.125	-2291.5061
S011 HIGH RIVER	3598.0	30.583	0.368	0.196	-0.173	-3174.6638
S012 INNISFAIL	2897.0	28.815	0.347	0.158	-0.190	-3484.1126
S013 CLARESHOLM	3276.0	29.196	0.352	0.178	-0.174	-3189.4273
S014 OLDS	3658.0	26.485	0.319	0.199	-0.120	-2207.0118
S015 BANFF	3410.0	59.358	0.715	0.186	-0.530	-9734.3097
GRADE 4						
S016 COALDALE	3654.0	18.692	0.225	0.199	-0.026	-485.4454
S017 AIRDRIE	1408.0	13.791	0.166	0.077	-0.090	-1645.9982
S018 CANMORE	1927.0	16.261	0.196	0.105	-0.091	-1673.9553
S019 COCHRANE	1450.0	18.107	0.218	0.079	-0.139	-2559.7745
S020 OKOTOKS	1795.0	15.612	0.188	0.098	-0.090	-1662.2706
S021 PINCHER CR.	3448.0	27.192	0.328	0.188	-0.140	-2573.7462
S022 HANNA	2627.0	24.107	0.290	0.143	-0.148	-2711.5611
S023 FORT MACD.	3067.0	23.750	0.286	0.167	-0.119	-2192.4172
S024 CARDSTON	3043.0	21.275	0.256	0.166	-0.091	-1668.4334
S025 STRATHMORE	1561.0	14.684	0.177	0.085	-0.092	-1690.8794
S026 SYLVAN L.	1837.0	14.505	0.175	0.100	-0.075	-1375.1608
S027 DIDSBURY	2153.0	17.668	0.213	0.117	-0.096	-1759.5245
S028 SUNDRIE	1099.0	12.200	0.147	0.060	-0.087	-1602.5834
S029 BLAIRMORE	2321.0	18.875	0.227	0.126	-0.101	-1858.9329
S030 3 HILLS	1564.0	12.227	0.147	0.085	-0.062	-1143.7740
S031 VULCAN	1412.0	20.095	0.242	0.077	-0.165	-3038.0065
S032 NANTON	1152.0	12.105	0.146	0.063	-0.083	-1528.7065
S033 CORONATION	1198.0	11.748	0.142	0.065	-0.076	-1403.7029
S034 BASSANO	999.0	9.072	0.109	0.054	-0.055	-1009.8930
GRADE 5						
S035 REDCLIFF	3006.0	9.372	0.113	0.164	0.051	930.5387
S036 CARSTAIRS	1059.0	7.521	0.091	0.058	-0.033	-606.6073
S037 CASTOR	1207.0	9.471	0.114	0.066	-0.048	-890.4575
S038 MAGRATH	1315.0	5.154	0.062	0.072	0.009	173.5970
S039 COLEMAN	1543.0	5.679	0.068	0.084	0.016	285.3173
S040 BOW ISLAND	1296.0	10.050	0.121	0.071	-0.051	-929.4896
S041 ECKVILLE	774.0	10.196	0.123	0.042	-0.081	-1483.9393
S042 CROSSFIELD	777.0	8.224	0.099	0.042	-0.057	-1044.3144
S043 PIC. BUTTE	1164.0	7.783	0.094	0.063	-0.030	-559.5131
S044 OYEN	692.0	10.460	0.126	0.038	-0.088	-1624.3251
S045 VAUXHALL	954.0	9.876	0.119	0.052	-0.067	-1233.0158
S046 RAYMOND	2290.0	8.486	0.102	0.125	0.022	410.8153
S047 TROCHU	752.0	7.270	0.088	0.041	-0.047	-857.9737
S048 TURNER V.	1132.0	5.964	0.072	0.062	-0.010	-188.6546
S049 MILK RIVER	814.0	10.823	0.130	0.044	-0.086	-1582.8351
S050 BENTLY	730.0	7.103	0.086	0.040	-0.046	-842.8843
S051 BEISEKER	486.0	4.238	0.051	0.026	-0.025	-452.5226
S052 CONSORT	609.0	7.037	0.085	0.033	-0.052	-949.3271
S053 ALIX	669.0	5.773	0.070	0.036	-0.033	-609.4699
GRADE 6						
S054 BLACKFALDS	1024.0	5.880	0.071	0.056	-0.015	-278.0937
S055 BLACK DIAM	1242.0	4.924	0.059	0.068	0.008	151.6284
S056 FOREMOST	534.0	3.281	0.040	0.029	-0.010	-192.4835
S057 DELBURNE	417.0	2.757	0.033	0.023	-0.011	-193.4504
S058 BRAGG CREEK	384.0	1.076	0.013	0.021	0.008	145.6903
S059 CAROLINE	385.0	3.533	0.043	0.021	-0.022	-397.3744
S060 ACME	351.0	4.036	0.049	0.019	-0.030	-542.7836
S061 PENHOLD	773.0	3.596	0.043	0.042	-0.001	-23.3142
S062 CARBON	435.0	2.979	0.036	0.024	-0.012	-224.6474
S063 BELLEVUE	1186.0	3.263	0.039	0.065	0.025	463.4757
S064 BOWDEN	661.0	3.662	0.044	0.036	-0.008	-150.0522
GRADE 7						
S065 WATER PK.	141.0	6.371	0.077	0.008	-0.069	-1269.8499
S066 LINDEN	296.0	3.111	0.037	0.016	-0.021	-392.8224
S067 COUTTS	397.0	2.453	0.030	0.021	-0.008	-153.1174
S068 WARNER	434.0	2.751	0.033	0.024	-0.010	-175.2753

S Alta 1977

S069	STAVELY	432.0	3.452	0.042	0.024	-0.018	-532.4231
N070	DUCHESS	343.0	1.559	0.019	0.019	-0.000	-2.1422
S071	LONGVIEW	198.0	0.999	0.012	0.011	-0.001	-25.1408
S072	ROCKYFORD	276.0	2.974	0.036	0.015	-0.021	-382.5440
S073	VETERAN	279.0	1.816	0.022	0.015	-0.007	-123.1251
S074	BLACKIE	223.0	2.774	0.033	0.012	-0.021	-391.2638
S075	MIRROR	335.0	1.086	0.013	0.018	0.005	94.4330
S076	COWLEY	284.0	0.838	0.010	0.015	0.005	98.5018
S077	BARONS	283.0	1.381	0.017	0.015	-0.001	-22.7656
S078	GLEICHEN	339.0	1.182	0.014	0.018	0.004	77.2076
S079	LANGDON	141.0	0.451	0.005	0.008	0.002	41.1125
S080	LOMOND	182.0	1.448	0.017	0.010	-0.008	-136.6901
S081	TILLY	329.0	1.784	0.021	0.018	-0.004	-65.9907
S082	DONALDA	198.0	1.585	0.019	0.011	-0.008	-152.9940
S083	STANDARD	305.0	1.964	0.024	0.017	-0.007	-130.0153
S084	DELIA	232.0	2.151	0.026	0.013	-0.013	-244.3489
S085	PINE LAKE	0.0	1.355	0.016	0.000	-0.016	-300.0573
S086	NORLEFORD	417.0	1.696	0.020	0.023	0.002	41.4519
S087	BIG VALLEY	344.0	1.498	0.018	0.019	0.001	12.1950
S088	TORRINGTON	186.0	0.571	0.007	0.010	0.003	59.5641
S089	CARMANGAY	263.0	1.307	0.016	0.014	-0.001	-26.4075
S090	GRASSY L.	151.0	0.612	0.007	0.008	0.001	15.4273
S091	HUSSAR	177.0	1.051	0.013	0.010	-0.003	-55.6437
S092	CEREAL	231.0	1.586	0.019	0.013	-0.007	-120.2011
S093	CHAMPION	300.0	1.283	0.015	0.016	0.001	15.8023
S094	ARROWOOD	145.0	1.265	0.015	0.008	-0.007	-135.1314
S095	IRVINE	221.0	1.203	0.014	0.012	-0.002	-45.3508
S096	CREMONA	227.0	2.101	0.025	0.012	-0.013	-238.2996
S097	L. LOUISE	140.0	2.415	0.029	0.008	-0.021	-394.8334
S098	COALHURST	473.0	0.812	0.010	0.026	0.016	293.1532
S099	IRRICANA	264.0	1.432	0.017	0.014	-0.003	-53.1074
S100	SPRUCE VIEW	131.0	1.123	0.014	0.007	-0.006	-117.7418
S101	ROLLG HILLS	171.0	0.264	0.003	0.009	0.006	112.5095
S102	GRANUM	413.0	2.159	0.026	0.022	-0.004	-65.1129
N998	ELNORA	211.0	2.306	0.028	0.011	-0.016	-299.5948
S104	CARSELAND	117.0	0.743	0.009	0.006	-0.003	-47.4507
S105	YOUNGSTOWN	272.0	0.570	0.007	0.015	0.008	145.7574
S106	ROSEMARY	273.0	1.537	0.019	0.015	-0.004	-67.2763
S107	MILO	89.0	0.654	0.008	0.005	-0.003	-55.7227
S108	EMPRESS	238.0	1.832	0.022	0.013	-0.009	-167.5982
S109	LESLIEVILLE	132.0	0.979	0.012	0.007	-0.005	-84.7565
S110	SHAUGHNESSY	299.0	1.614	0.019	0.016	-0.003	-58.3670
S111	WIMBOURNE	54.0	0.655	0.008	0.003	-0.005	-91.0390
	ENCHANT	0.0	0.000	0.000	0.000	0.000	0.0000
	MANYBERRIES	0.0	0.000	0.000	0.000	0.000	0.0000
S114	CLUNY	95.0	0.312	0.004	0.005	0.001	26.0065
S115	BENALTO	72.0	0.406	0.005	0.004	-0.001	-16.0195
S116	HALKIRK	152.0	0.165	0.002	0.008	0.006	115.3628
GRADE 8							
S117	DE WINTON	75.0	1.743	0.021	0.004	-0.017	-310.9224
S118	BURDETT	214.0	0.504	0.006	0.012	0.006	102.4381
S119	STIRLING	543.0	1.225	0.015	0.030	0.015	271.7417
S120	BARNWELL	155.0	0.767	0.009	0.008	-0.001	-14.8327
S121	ROSEDALE	157.0	2.108	0.025	0.009	-0.017	-309.7111
S122	CLIVE	254.0	0.818	0.010	0.014	0.004	72.8940
S123	MTN. VIEW	61.0	0.442	0.005	0.003	-0.002	-36.9343
S124	LUNDBRECK	142.0	1.720	0.021	0.008	-0.013	-238.9586
	DUNMORE	0.0	0.000	0.000	0.000	0.000	0.0000
S126	MILLARVIL	0.0	0.364	0.004	0.000	-0.004	-80.5585
S127	HILLCREST	653.0	1.449	0.017	0.036	0.018	332.0157
S128	FRANK	201.0	0.587	0.007	0.011	0.004	71.0147
S129	STANDOFF	0.0	1.019	0.012	0.000	-0.012	-225.7599
S130	IRON SPRING	36.0	0.413	0.005	0.003	-0.002	-35.3892
S131	BOTHA	133.0	0.825	0.010	0.007	-0.003	-49.7445
	CAYLEY	0.0	0.000	0.000	0.000	0.000	0.0000
S133	GLENWOOD	199.0	0.193	0.002	0.011	0.008	156.1769
S134	HILDA	80.0	0.312	0.004	0.004	0.001	11.0065
S135	ACADIA V.	136.0	0.763	0.009	0.007	-0.002	-33.0400
	CONDOR	0.0	0.000	0.000	0.000	0.000	0.0000
	GADSBY	0.0	0.000	0.000	0.000	0.000	0.0000
S138	ERSKINE	234.0	0.299	0.004	0.013	0.009	157.6814
S139	EXSHAW	339.0	1.306	0.016	0.021	0.005	99.7502
S140	DIAMOND CIT	73.0	0.472	0.006	0.004	-0.002	-31.6246
	BROCKET	0.0	0.000	0.000	0.000	0.000	0.0000
S142	STZIKON	69.0	0.363	0.004	0.004	-0.001	-11.3567
S143	MORRIN	230.0	0.657	0.008	0.013	0.005	84.5435
S144	RUMSEY	85.0	0.673	0.008	0.005	-0.003	-63.9292
	MACHINE	0.0	0.000	0.000	0.000	0.000	0.0000
	SHACKELL	0.0	0.000	0.000	0.000	0.000	0.0000
	E.COULEE	0.0	0.000	0.000	0.000	0.000	0.0000
S148	WRENTHAM	68.0	0.351	0.004	0.004	-0.001	-9.7940
S149	TURIN	99.0	0.219	0.003	0.005	0.003	50.4004
S150	HAYS	75.0	0.513	0.006	0.004	-0.002	-38.6823
S151	HILL SPRING	175.0	0.672	0.008	0.010	0.001	26.2431
S152	PINCHER ST.	31.0	1.160	0.014	0.002	-0.012	-225.9104
S155	GULL LAKE	92.0	0.704	0.008	0.005	-0.003	-63.3950
	MADDEN						
	HUXLEY						
	SPRING COU.						
	MOSSLEIGH						
S160	BALSTON	465.0	0.464	0.006	0.025	0.020	362.3492
	WALSH						
S162	CRAIGMYLE	52.0	0.459	0.006	0.003	-0.003	-49.5173
	SIBBALD						
	ALTARIO						
S165	BYEMOOR	35.0	0.724	0.009	0.002	-0.007	-125.2236
S995	7 PERSONS	122.0	0.668	0.008	0.007	-0.001	-25.8372
S999	ROWLEY	0.0	0.215	0.003	0.000	-0.003	-47.5823
	WESTWARD HO						

Da
withdrawal

APPENDIX Db

NORTHERN ALBERTA
(Listed by 1985 classification of places)
1977 data

place	1976 pop	1977 Functional INDEX	COEFF.	1976 POP.coeff.	DIFF.	POpulation Discrepancy
GRADE 2						
N002 GRND PRAR	17626.0	106.421	1.282	0.959	-0.323	-5940.9395
N003 SHERD. PK	26534.0	64.152	0.773	1.444	0.671	12327.4944
N004 ST.ALBERT	24129.0	58.024	0.699	1.313	0.614	11279.6676
N005 FT.MCMUR	15424.0	62.824	0.757	0.839	0.082	1511.5773
GRADE 3						
N006 LLOYDMIN	10311.0	61.512	0.741	0.561	-0.180	-3310.7466
N007 CAMROSE	10104.0	72.767	0.877	0.550	-0.327	-6010.2935
N008 WETASKIWAN	6754.0	43.716	0.527	0.367	-0.159	-2926.8892
N009 LEDUC	8578.0	39.412	0.475	0.467	-0.008	-149.7383
N010 SPRUCE GRV	0.0	26.983	0.325	0.000	-0.325	-5975.3652*
N011 PEACE RIV.	4840.0	43.188	0.520	0.263	-0.257	-4725.9978
N012 EDSON	4038.0	38.537	0.464	0.220	-0.245	-4496.0698
N013 HINTON	6731.0	41.108	0.495	0.366	-0.129	-2372.4015
N014 FORT SASK	8304.0	32.442	0.391	0.452	0.061	1119.8214
N015 DRAYTON V	4303.0	36.100	0.435	0.234	-0.201	-3691.3770
N016 ST. PAUL	4337.0	33.939	0.409	0.236	-0.173	-3178.7539
N017 WESTLOCK	3721.0	36.984	0.446	0.202	-0.243	-4469.1961
N018 BONNYVILLE	2825.0	27.676	0.333	0.154	-0.180	-3303.7805
N019 BARRHEAD	2944.0	29.975	0.361	0.160	-0.201	-3693.9705
N020 PONOKA	4636.0	36.105	0.435	0.252	-0.183	-3359.4647
N021 VEGREVILLE	4158.0	29.754	0.358	0.226	-0.132	-2431.0381
N022 GRND CENTER	2780.0	25.980	0.313	0.151	-0.162	-2973.7416
N023 VERMILION	3182.0	20.402	0.246	0.173	-0.073	-1336.0963
N024 ATHABASCA	1759.0	20.679	0.249	0.096	-0.153	-2820.3725
GRADE 4						
N025 WAINWRIGHT	3890.0	25.265	0.304	0.212	-0.093	-1704.9304
N026 HI PRAIRIE	2281.0	23.794	0.287	0.124	-0.163	-2988.1765
N027 MORINVILLE	2097.0	12.106	0.146	0.114	-0.032	-585.8105
N028 STONY PL.	2717.0	21.317	0.257	0.148	-0.109	-2003.7304
N029 WHITECOURT	3878.0	29.866	0.360	0.211	-0.149	-2735.7296
N030 SLAVE L	3561.0	21.284	0.256	0.194	-0.063	-1152.4397
N031 JASPER	3404.0	17.659	0.213	0.185	-0.028	-506.6918
N032 FAIRVIEW	2248.0	23.057	0.278	0.122	-0.155	-2858.0375
N033 NISKU	0.0	9.100	0.110	0.000	-0.110	-2015.2964*
N034 VALLEYVIEW	1716.0	19.749	0.238	0.093	-0.145	-2657.4685
N035 HIGH LEVEL	1562.0	13.194	0.159	0.085	-0.074	-1359.8170
N036 MANNING	1050.0	9.146	0.110	0.057	-0.053	-975.4641
N041 GRIMSHAW	1665.0	11.883	0.143	0.091	-0.053	-966.4906
N038 BEAVERLODGE	1332.0	8.976	0.108	0.072	-0.036	-655.7912
N039 LAC LA BIC	1954.0	17.388	0.209	0.106	-0.103	-1896.6355
N040 RIMBY	1452.0	15.018	0.181	0.079	-0.102	-1873.7437
N041 DEVON	2786.0	13.894	0.167	0.152	-0.016	-290.8982
N042 TOFIELD	1120.0	10.143	0.122	0.061	-0.061	-1126.2212
N043 PROVOST	1532.0	16.010	0.193	0.083	-0.110	-2013.3294
N044 REDWATER	1493.0	12.143	0.146	0.081	-0.065	-1196.0419
N045 VIKING	1217.0	11.767	0.142	0.066	-0.076	-1388.7828
N046 2 HILLS	943.0	9.119	0.110	0.051	-0.059	-1076.3168
N047 SMOKY L.	925.0	7.916	0.095	0.050	-0.045	-828.0966
N048 SPIRIT R.	1020.0	10.251	0.124	0.055	-0.068	-1250.1149
N049 GRND CACHE	4116.0	17.431	0.210	0.224	0.014	255.9078
N050 MAYERTHORP	1018.0	10.713	0.129	0.055	-0.074	-1354.3337
N051 SWAN HILLS	2012.0	7.085	0.085	0.109	0.024	443.1112
N052 ONOWAY	444.0	7.300	0.088	0.024	-0.064	-1172.6098
GRADE 5						
N053 ELK POINT	807.0	8.471	0.102	0.044	-0.058	-1068.9046
N054 BASHAW	773.0	6.729	0.081	0.042	-0.039	-717.1232
N055 FALHER	1120.0	10.954	0.132	0.061	-0.071	-1305.6690
N056 LAMONT	997.0	6.109	0.074	0.054	-0.019	-355.8669
N057 GLENDON	370.0	2.716	0.033	0.020	-0.013	-231.4570
N058 THORSBY	657.0	11.363	0.137	0.036	-0.101	-1859.3971
N059 KILLAM	837.0	6.488	0.078	0.048	-0.030	-549.7416
N060 BOYLE	576.0	5.786	0.070	0.031	-0.038	-705.3698
N061 DAYSLAND	615.0	8.723	0.105	0.033	-0.072	-1316.6611
N062 GIBBONS	1093.0	3.540	0.043	0.059	0.017	308.9677
N063 FORESTBURG	808.0	8.253	0.099	0.044	-0.055	-1019.5633
N064 SEXSMITH	770.0	3.542	0.043	0.042	-0.001	-14.3379
N065 HARDISTY	534.0	5.947	0.072	0.029	-0.043	-783.0622
N066 ANDREW	486.0	3.346	0.040	0.026	-0.014	-255.0655
N067 MCCLENNAN	1133.0	4.282	0.052	0.062	0.010	184.7048
N068 BEAUMONT	126.0	2.559	0.031	0.007	-0.024	-440.7771

N. Alta 1972

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N069	FOX CREEK	1625.0	6.306	0.076	0.088	0.012	228.5815
N070	EVANSBURG	671.0	6.231	0.075	0.037	-0.039	-708.9469
N071	THORHILD	533.0	4.204	0.051	0.029	-0.022	-397.9464
N072	WARBURG	408.0	2.119	0.026	0.022	-0.003	-61.3601
N073	MANNVILLE	681.0	4.121	0.050	0.037	-0.013	-231.5787
N074	BRETON	424.0	4.021	0.048	0.023	-0.025	-466.4119
N075	HYTHE	460.0	2.643	0.032	0.025	-0.007	-125.2317
N076	CALMAR	872.0	6.036	0.073	0.047	-0.025	-464.7058
N077	COLD LAKE	1317.0	7.707	0.093	0.072	-0.021	-389.6605
N078	HOLDEN	393.0	3.374	0.041	0.021	-0.019	-354.2812
N079	LEGAL	874.0	5.042	0.061	0.048	-0.013	-242.6528
N080	VILNA	348.0	4.407	0.053	0.019	-0.034	-627.9687
N081	MUNDARE	552.0	3.687	0.044	0.030	-0.014	-261.5492
N082	MYRNAM	396.0	3.055	0.037	0.022	-0.015	-280.4479
N083	LA CRETE	349.0	3.278	0.039	0.019	-0.021	-376.8906
GRADE 6							
N084	FT. VERMN	729.0	1.908	0.023	0.040	0.017	306.4307
N085	ANDROSSAN	126.0	5.652	0.068	0.007	-0.061	-1125.5611
N086	NAMAO	0.0	9.933	0.120	0.000	-0.120	-2199.6172
N087	MILLET	762.0	4.322	0.052	0.041	-0.011	-195.0767
N088	RYCROFT	533.0	5.127	0.062	0.029	-0.033	-602.3454
N089	SEDGEWICK	825.0	4.504	0.054	0.045	-0.009	-172.5051
N090	SANGUDO	409.0	5.724	0.069	0.022	-0.047	-858.5872
N091	BERWYN	433.0	2.744	0.033	0.024	-0.010	-174.6567
N092	HUGHENDEN	236.0	2.349	0.028	0.013	-0.015	-284.1338
N093	BRUDERHEIM	484.0	3.480	0.042	0.026	-0.016	-286.6881
N094	EDGERTON	324.0	3.224	0.039	0.018	-0.021	-389.9420
N095	WEMBLEY	507.0	0.641	0.008	0.028	0.020	365.1390
N096	CLYDE	312.0	3.611	0.044	0.017	-0.027	-487.6032
N097	PLAMONDEN	228.0	1.373	0.017	0.012	-0.004	-76.0014
N098	RYLEY	432.0	1.660	0.020	0.024	0.004	64.3369
N099	IRMA	428.0	3.240	0.039	0.023	-0.016	-289.4118
N100	LOUGHHEED	213.0	1.341	0.016	0.012	-0.005	-83.9737
N101	MARWAYNE	376.0	3.621	0.044	0.020	-0.023	-425.7869
GRADE 7							
N102	NAMPA	286.0	2.936	0.035	0.016	-0.020	-364.1319
N103	WABANUM	581.0	1.784	0.021	0.032	0.010	186.0129
N104	HINES CREEK	503.0	2.555	0.031	0.027	-0.003	-62.7657
N105	NEW SAREPA	237.0	1.629	0.020	0.013	-0.007	-123.8491
N106	BON ACCORD	882.0	3.033	0.037	0.048	0.011	210.2627
N107	HOBBEMA	56.0	2.506	0.030	0.003	-0.027	-499.0374
N108	ASHMONT	119.0	0.539	0.006	0.006	-0.000	-0.4353
N109	WILDWOOD	360.0	3.861	0.047	0.020	-0.027	-495.0321
N110	INNISFREE	265.0	2.082	0.025	0.014	-0.011	-196.0825
N111	ENTWHISTLE	380.0	1.485	0.018	0.021	0.003	51.1234
N112	RAINBOW	434.0	1.699	0.020	0.024	0.003	57.8185
N113	NITON JUNC	55.0	2.830	0.034	0.003	-0.031	-571.8112
N114	PEERS	162.0	0.634	0.008	0.009	0.001	21.5048
N115	WINFIELD	206.0	1.707	0.021	0.011	-0.009	-172.0237
N116	ALTA BEACH	432.0	2.586	0.031	0.024	-0.008	-140.7779
N117	FT. CHIPWN.	1179.0	1.505	0.018	0.064	0.046	845.7311
N118	WASKATENAU	271.0	2.253	0.027	0.015	-0.012	-227.8694
N119	GIROUXVILLE	0.0	1.669	0.020	0.000	-0.020	-369.6993
N120	JARVIE	75.0	0.209	0.003	0.004	0.002	28.6843
N121	EAGLESHAM	229.0	1.593	0.019	0.012	-0.007	-123.6826
N122	NEWBROOK	80.0	0.587	0.007	0.004	-0.003	-49.9636
N123	DEBOLT	63.0	0.992	0.012	0.003	-0.009	-156.6683
N124	ALLIANCE	228.0	1.078	0.013	0.012	-0.001	-10.6141
N125	DONELLY	278.0	1.526	0.018	0.015	-0.003	-59.8752
N126	KITSCOTTY	391.0	1.372	0.017	0.021	0.005	87.2146
N127	WANHAM	225.0	0.719	0.009	0.012	0.004	65.7959
N128	BLUE RIDGE	195.0	1.022	0.012	0.011	-0.002	-31.2124
N129	MALLAIG	339.0	1.876	0.023	0.018	-0.004	-76.5246
N130	CLAIRMONT	599.0	0.629	0.008	0.033	0.025	459.7296
N131	KINUSO	305.0	2.595	0.031	0.017	-0.015	-269.6685
N132	SMITH	355.0	0.551	0.007	0.019	0.013	231.0307
N133	WANDERG. R.	27.0	0.378	0.005	0.001	-0.003	-56.7850
N134	CZAR	184.0	0.523	0.006	0.010	0.004	68.1611
N135	CHAUVIN	296.0	1.013	0.012	0.016	0.004	71.6895
N136	WORSLEY	63.0	1.736	0.021	0.003	-0.017	-321.3929
N137	HAIRY HILL	96.0	1.057	0.013	0.005	-0.008	-138.0615
N138	ALDER FLAT	94.0	1.745	0.021	0.005	-0.016	-292.3710
N139	LA GLACE	136.0	0.572	0.007	0.007	0.001	9.3556
N140	BRUCE	93.0	0.515	0.006	0.005	-0.001	-21.1200
N141	ROCHESTER	85.0	0.916	0.011	0.005	-0.006	-117.8642
N142	RADWAY	169.0	1.073	0.013	0.009	-0.004	-68.6625
N143	BUCK LAKE	169.0	0.804	0.010	0.009	-0.000	-8.9619
N144	STROME	227.0	0.593	0.007	0.012	0.005	95.6114
N145	HAY LKS.	236.0	0.832	0.010	0.013	0.003	51.8360
N146	DERWENT	156.0	1.426	0.017	0.008	-0.009	-159.8362

N.Alta 1977

D3 Cont'd

N147	MA ME O BH	87.0	1.588	0.019	0.005	-0.014	-264.7263
N148	LODGEPOLE	130.0	0.589	0.007	0.007	-0.000	-0.4684
N149	FT. ASSINIB	185.0	1.465	0.018	0.010	-0.008	-139.4491
N150	WILLINGDON	308.0	3.132	0.038	0.017	-0.021	-385.5749
N151	TOMAHAWK	79.0	0.591	0.007	0.004	-0.003	-51.9303
N152	AMISK	133.0	0.668	0.008	0.007	-0.001	-14.9294
N153	BROWNVALE	148.0	0.736	0.009	0.008	-0.001	-14.9828
N154	HEISLER	200.0	0.702	0.008	0.011	0.002	44.4870
N155	MULHURST	104.0	1.187	0.014	0.006	-0.009	-158.9353
N156	BAWLF	207.0	1.006	0.012	0.011	-0.001	-15.6982
N157	ELLERSLIE	0.0	6.275	0.076	0.000	-0.076	-1389.6171
N158	NEW NORWAY	276.0	0.963	0.012	0.015	0.003	62.8286
N159	BLUFFTON	112.0	2.083	0.025	0.006	-0.019	-349.1925
GRADE B							
N160	CALAHOO	143.0	0.280	0.003	0.008	0.004	81.0535
N161	KINSELLA	68.0	1.002	0.012	0.004	-0.008	-153.8029
N162	ARDMORE	231.0	0.384	0.005	0.013	0.008	145.9196
N163	SEBA-BEACH	126.0	1.307	0.016	0.007	-0.009	-163.4911
N164	DEWBERRY	161.0	1.392	0.017	0.009	-0.008	-147.1588
	GRASSLAND	0.0	0.000	0.000	0.000	0.000	0.0000
N166	DUFFIELD	83.0	0.435	0.005	0.005	-0.001	-13.2971
N167	COLINGTON	126.0	0.402	0.005	0.007	0.002	36.9278
N168	FAWCETT	129.0	0.949	0.011	0.007	-0.004	-81.2302
N169	GALAHAD	184.0	1.611	0.019	0.010	-0.009	-172.7289
N170	ROSALIND	187.0	0.994	0.012	0.010	-0.002	-33.0666
N171	DARWELL	27.0	0.287	0.003	0.001	-0.002	-36.3214
N172	CHIPMAN	296.0	0.637	0.008	0.016	0.008	154.9714
N173	LAVOY	115.0	0.809	0.010	0.006	-0.003	-64.1195
N174	SUNNYBRK	50.0	0.776	0.009	0.003	-0.007	-121.8864
	ROLLYVIEW	0.0	0.000	0.000	0.000	0.000	0.0000
N176	WESTEROSE	40.0	0.849	0.010	0.002	-0.008	-148.0745
N177	EDBERG	140.0	0.565	0.007	0.008	0.001	14.9801
N178	CADOMIN	129.0	0.211	0.003	0.007	0.004	82.3100
N179	FAUST	298.0	0.390	0.005	0.016	0.012	211.5467
	MINBURN	0.0	0.000	0.000	0.000	0.000	0.0000
N181	WARSPITE	92.0	0.365	0.004	0.005	0.001	11.2189
N182	PARADISE V	144.0	0.967	0.012	0.008	-0.004	-70.2314
	KEG RIVER	0.0	0.000	0.000	0.000	0.000	0.0000
N184	ROUND HILL	123.0	0.330	0.004	0.007	0.003	49.8764
	ROCHFORT B	0.0	0.000	0.000	0.000	0.000	0.0000
N186	FERINTOSH	135.0	0.713	0.009	0.007	-0.001	-23.0035
N188	JOUSSARD	270.0	0.486	0.006	0.015	0.009	162.4231
S187	ROBB	211.0	0.648	0.008	0.011	0.004	67.4005
N189	VIMY	116.0	0.441	0.005	0.006	0.001	18.3351
N190	CLANDONALD	136.0	0.589	0.007	0.007	0.000	5.3080
	BEAVALON	0.0	0.000	0.000	0.000	0.000	0.0000
N192	ISLAY	119.0	0.499	0.006	0.006	0.000	8.3959
N193	WOKING	80.0	0.981	0.012	0.004	-0.007	-137.2791
N194	CHERHILL	71.0	0.355	0.004	0.004	-0.000	-7.5101
	GUNN	0.0	0.000	0.000	0.000	0.000	0.0000
N196	OHATON	85.0	0.255	0.003	0.005	0.002	28.5146
N197	CANYON CR.	138.0	0.241	0.003	0.008	0.005	84.5562
N198	PICKARDVIL	120.0	0.559	0.007	0.007	-0.000	-3.7402
	FAOYAN	0.0	0.000	0.000	0.000	0.000	0.0000
N200	RANFURLY	107.0	0.510	0.006	0.006	-0.000	-5.9540
N201	SPEDDEN	66.0	0.762	0.009	0.004	-0.006	-102.8149
N202	HEINSBERG	80.0	0.264	0.003	0.004	0.001	21.6138
	VILLENEUVE	0.0	0.000	0.000	0.000	0.000	0.0000
	ALCOMDALE	0.0	0.000	0.000	0.000	0.000	0.0000
	MEETING CK	0.0	0.000	0.000	0.000	0.000	0.0000
N206	GWYNNE	67.0	0.124	0.001	0.004	0.002	39.5445
N210	ST.-MICHAEL	74.0	0.533	0.006	0.004	-0.002	-44.1308
N984	PIBROCH	88.0	0.578	0.007	0.005	-0.002	-39.9837
N986	N HABAY	0.0	1.138	0.014	0.000	-0.014	-251.9783
N987	BLUESKY	0.0	0.745	0.009	0.000	-0.009	-164.9337
N988	FALLIS	0.0	0.875	0.011	0.000	-0.011	-193.7485
N990	WILDWATER	0.0	0.234	0.003	0.000	-0.003	-51.9272
N991	DABB	43.0	0.407	0.005	0.002	-0.003	-47.1698
N992	CLOVER BAR	0.0	0.889	0.011	0.000	-0.011	-196.9442
N999	WINTERBRN.	114.0	4.257	0.051	0.006	-0.045	-828.7449

N>8> Population Discrepancies only accurate if population data was available for 1976